Appendices

Appendix A
Public Input Questionnaire & Compilation of Results

Chickamauga and Chattanooga National Military Park Traffic Impact Study and Subarea Transportation Plan

Thank you for attending our open house. Please take time to fill out this survey and help us understand transportation issues in the Chickamauga Battlefield unit of Chickamauga Chattanooga National Military Park (CCNMP) and the surrounding communities.

A. US Highway 27 Relocation (please circle the correct response)

1. Do you use the US Highway 27 relocation? a. Yes b. No
2. If not, why? _____
3. Does it save you time? a. Yes b. No
4. Is access convenient? a. Yes b. No
5. If not, what are the problem areas? _____

B. Lafayette Road through Park (please circle the correct response)

5. How often do you use Lafayette Road through the Park?
   a. Frequently (5 or more times per week) b. Occasionally (1-4 times per week) c. Rarely (A few times per month) d. Never

6. Why do you use Lafayette Road?
   a. To visit the Park b. To travel through the Park to other destinations

C. CCNMP (please circle the correct response)

7. Do you visit the Park? a. Yes b. No

8. If so, how often?
   a. Frequently (once or twice a month) b. Occasionally (once or twice every three months) c. Rarely (A few times per year) d. Never

9. What is the purpose of your visit?
   a. History b. Recreation c. Natural Habitat

D. Area Transportation Issues

10. As a motorist, do you experience any problems on roads in and around the Park? a. Yes b. No
    If yes, please describe the problem(s) and the location or mark the location on the attached map.
    Brief description _____
    _____
    Location _____

11. As a cyclist, do you experience any problems on roads or trails in and around the Park?
    a. Yes b. No
    If yes, please describe the problem(s) and the location or mark the location on the attached map.
    Brief description _____
    _____
    Location _____

12. As a pedestrian, do you experience any problems in and around the Park? a. Yes b. No
    If yes, please describe the problem(s) and the location or mark the location on the attached map.
    Brief description _____
    _____
    Location _____

- Continued on Page 2 -

E. Future Conditions

13. Within the Chickamauga Battlefield unit of CCNMP, what would you change about the transportation systems, facilities or services?

_____
_____
_____

13a. Within the Chickamauga Battlefield unit of CCNMP, what would you change about how Park visitors access or circulate around the Park?

_____
_____
_____

13b. Within the Chickamauga Battlefield unit of CCNMP, what would you change about how non-Park users access or circulate through the Park?

_____
_____
_____

13c. How could the visitor experience at the Chickamauga Battlefield unit of CCNMP be improved through changes in transportation systems, facilities or services?

_____
_____
_____

13d. How could the preservation of cultural or natural resources at the Chickamauga Battlefield unit of CCNMP be improved through changes in transportation systems, facilities or services?

_____
_____
_____

14. In the area outside the Chickamauga Battlefield unit of CCNMP, what would you change about the transportation systems, facilities, or services?

_____
_____
_____

F. Other Comments

15. Do you have any other comments regarding the transportation study or transportation needs in or around the Chickamauga Battlefield unit of CCNMP? You may use attached map to show where there are transportation issues you feel should be addressed.

_____
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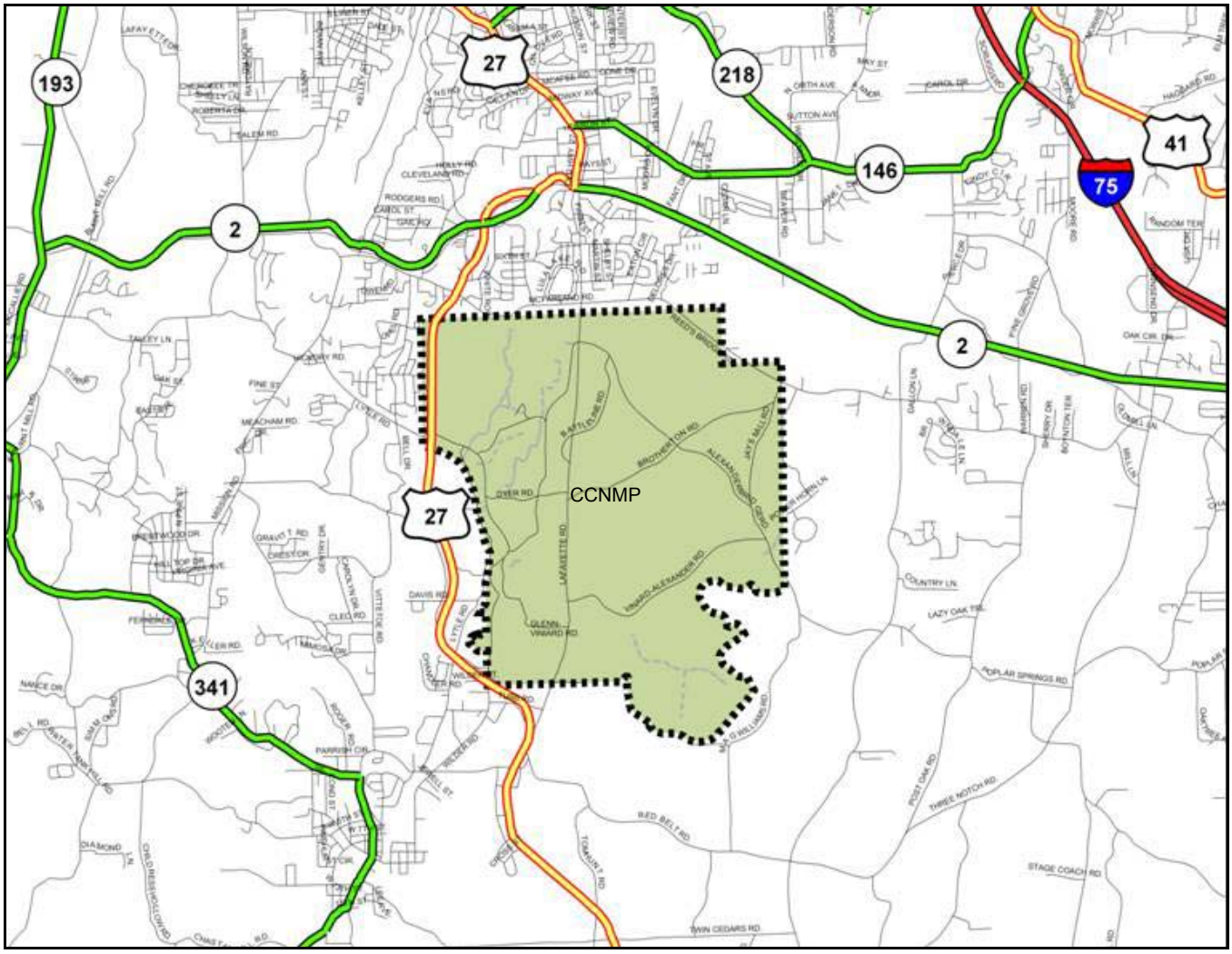
CCNMP Traffic Impact Study and Subarea Transportation Plan Study Area



If you would like to be added to the project mailing list and receive copies of newsletters, please provide contact information below.

Name:
Address:
City:
State:
Zip Code:

For more information on the CCNMP Study, please visit the project website at:
http://www.dot.state.ga.us/dot/plan-prog/planning/studies/index.shtml

Thank you for completing this survey. Please leave completed survey in box provided or mail or fax to the following:

Mary Shavalier
Day Wilburn Associates, Inc.
1718 Peachtree Street, Suite 461
Atlanta, Georgia 30309
telephone: 404-249-7550 · fax 404-249-7705
mshavalier@daywilburn.com

Chickamauga and Chattanooga National Military Park Traffic Impact Study and Subarea Transportation Plan

The following survey is being conducted to support a study which is examining changes in traffic patterns around the Chickamauga Battlefield unit of Chickamauga Chattanooga National Military Park (CCNMP) resulting from the completion of the US 27 Relocation in Walker County, Georgia. Please take time to **complete the survey by August 29, 2003** and help us understand transportation issues affecting the Park and surrounding communities. We also encourage you to invite your constituents and others in your community to complete a survey.

A. US Highway 27 Relocation (please circle the correct response)

1. Do you use the US Highway 27 relocation? a. Yes b. No
2. If not, why? _____
3. Does it save you time? a. Yes b. No
4. Is access convenient? a. Yes b. No
5. If not, what are the problem areas? _____

B. Lafayette Road through Park (please circle the correct response)

5. How often do you use Lafayette Road through the Park?
   a. Frequently (5 or more times per week) b. Occasionally (1-4 times per week) c. Rarely (A few times per month) d. Never

6. Why do you use Lafayette Road?
   a. To visit the Park b. To travel through the Park to other destinations

C. CCNMP (please circle the correct response)

7. Do you visit the Park? a. Yes b. No

8. If so, how often?
   a. Frequently (once or twice a month) b. Occasionally (once or twice every three months) c. Rarely (A few times per year) d. Never

9. What is the purpose of your visit?
   a. History b. Recreation c. Natural Habitat

D. Area Transportation Issues

10. As a motorist, do you experience any problems on roads in and around the Park? a. Yes b. No
    If yes, please describe the problem(s) and the location or mark the location on the attached map.
    Brief description _____
    _____
    Location _____

11. As a cyclist, do you experience any problems on roads or trails in and around the Park?
    a. Yes b. No
    If yes, please describe the problem(s) and the location or mark the location on the attached map.
    Brief description _____
    _____
    Location _____

12. As a pedestrian, do you experience any problems in and around the Park? a. Yes b. No
    If yes, please describe the problem(s) and the location or mark the location on the attached map.
    Brief description _____
    _____
    Location _____

- Continued on Page 2 -

E. Future Conditions

13. Within the Chickamauga Battlefield unit of CCNMP, what would you change about the transportation systems, facilities or services?

_____
_____
_____

13a. Within the Chickamauga Battlefield unit of CCNMP, what would you change about how Park visitors access or circulate around the Park?

_____
_____
_____

13b. Within the Chickamauga Battlefield unit of CCNMP, what would you change about how non-Park users access or circulate through the Park?

_____
_____
_____

13c. How could the visitor experience at the Chickamauga Battlefield unit of CCNMP be improved through changes in transportation systems, facilities or services?

_____
_____
_____

13d. How could the preservation of cultural or natural resources at the Chickamauga Battlefield unit of CCNMP be improved through changes in transportation systems, facilities or services?

_____
_____
_____

14. In the area outside the Chickamauga Battlefield unit of CCNMP, what would you change about the transportation systems, facilities, or services?

_____
_____
_____

F. Other Comments

15. Do you have any other comments regarding the transportation study or transportation needs in or around the Chickamauga Battlefield unit of CCNMP? You may use attached map to show where there are transportation issues you feel should be addressed.

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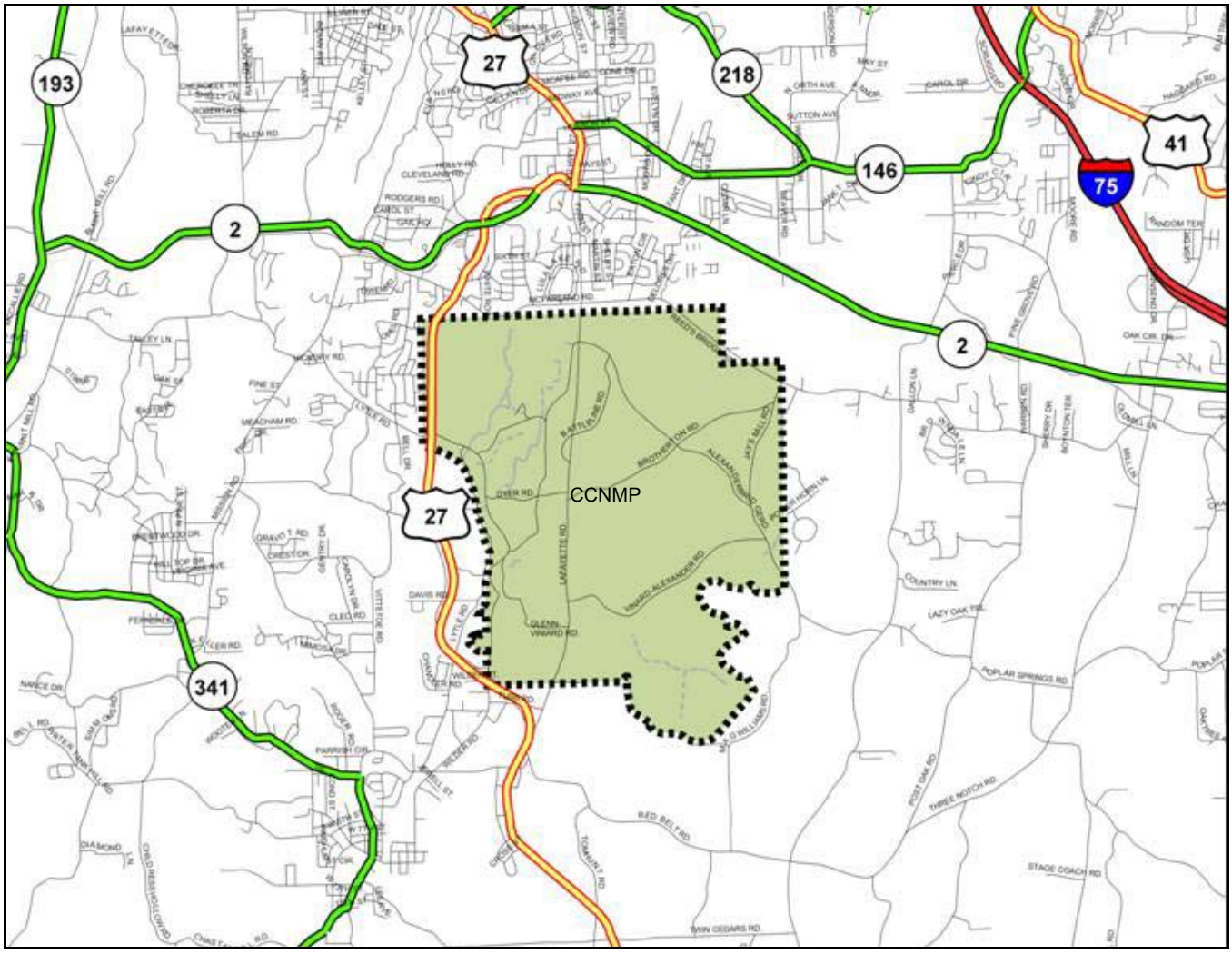
CCNMP Traffic Impact Study and Subarea Transportation Plan Study Area



If you would like to be added to the project mailing list and receive copies of newsletters, please provide contact information below.

Name:	
Address:	
City:	
State:	
Zip Code:	

For more information on the CCNMP Study and an electronic copy of the survey, please visit the project website at: http://www.dot.state.ga.us/dot/plan-prog/planning/studies/chickamauga_study/whats_new/index.shtml.

Thanks for your time and we look forward to your input. Please return the survey by August 29th, 2003 by mail or fax to the following:

Mary Shavalier
Day Wilburn Associates, Inc.
1718 Peachtree Street, Suite 461
Atlanta, Georgia 30309
Telephone: 404-249-7550 · fax 404-249-7705
mshavalier@daywilburn.com

Chickamauga and Chattanooga National Military Park
Traffic Impact Study and Subarea Transportation Plan
Questionnaire on Transportation Issues, Patterns, and Improvements (Summer 2003)

This questionnaire was designed to obtain public input regarding current transportation issues and desired future conditions in and around the Chickamauga Battlefield Unit of the Chickamauga and Chattanooga National Military Park. The questionnaire was distributed to the general public at the July 14, 2003 public open house in Fort Oglethorpe and was posted on the Georgia Department of Transportation website. Questionnaires were distributed to Stakeholder Participation Panel and Project Coordinating Committee members on July 14, 2003 and mailed to Environmental Justice Community members. Fifty-two completed questionnaires have been received through November 12, 2003.

The following presents a breakdown of the questionnaire respondents:
10 of 52 (19 percent) were SPP members
10 of 52 (19 percent) received the questionnaire as part of the Environmental Justice community outreach.
32 of 52 (62 percent) respondents are assumed to be the general public.

Questionnaire Findings

A. US Highway 27 Relocation (please circle the correct response)

1. Do you use the US Highway 27 relocation?	a. Yes	b. No	Other response	Blank	Total
Number	41	10	1	0	52
Percent	79%	19%	2%	0%	100%

2. If not, why?	Survey with Comment	Blank	Total
Number	12	40	52
Percent	23%	77%	100%

Comments:
Do not go that direction
Don't have a need or very rarely have need to be on that side of park
Not convenient from my business.
Don't live in that area of town.
Not convenient.
Seldom, think it's farther.
N/A
I enjoy riding through the Park.
Live in Atlanta
Away from my route to & from home.
Normally, I'm visiting the Park if I'm in this area.
From my home it is quicker to go through the Park.

3. Does it save you time?	a. Yes	b. No	Other response	Blank	Total
Number	31	14	1	6	52
Percent	60%	27%	2%	12%	100%

4. Is access convenient?	a. Yes	b. No	Other response	Blank	Total
Number	31	10	1	10	52
Percent	60%	19%	2%	19%	100%

5. If not, what are the problem areas?	Surveys with Comment	Blank	Total
Number	8	44	52
Percent	15%	85%	100%

Comments:
N/A
Opposite side from residence.
Busy traffic crossing bypass
Turning to get on by-pass off McFarland.
No problem. I live on the east side (Ringgold).
Out of the way.
Need traffic signals at Wilder Rd. or Osburn Rd.
Not planned well to permit access to hospital & LaFayette Rd.

B. Lafayette Road through Park (please circle the correct response)

5. How often do you use Lafayette Road through the Park?	a. Frequently (5 or more times per week)	b. Occasionally (1-4 times per week)	c. Rarely (A few times per month)	d. Never	Other response	Blank	Total
Number	11	13	23	5		0	52
Percent	21%	25%	44%	10%	0%	0%	100%

6. Why do you use Lafayette Road?	a. To visit the Park	b. To travel through the Park to other destinations	Other response	Blank	Total
Number	21	33	1	3	58*
Percent	36%	57%	2%	5%	100%

*Note: survey respondents gave more than one answer.

7. Do you visit the Park?	a. Yes	b. No	Other response	Blank	Total
Number	47	4		1	52
Percent	90%	8%	0%	2%	100%

8. If so, how often?	a. Frequently (once or twice a month)	b. Occasionally (once or twice every three months)	c. Rarely (A few times per year)	d. Never	Other response	Blank	Total
Number	16	12	20	3		1	52
Percent	31%	23%	38%	6%		2%	100%

9. What is the purpose of your visit?	a. History	b. Recreation	c. Natural Habitat	Other response	Blank	Total
Number	27	28	10		5	70*
Percent	39%	40%	14%	0%	7%	100%

*Note: survey respondents gave more than one answer.

Chickamauga and Chattanooga National Military Park
Traffic Impact Study and Subarea Transportation Plan
Questionnaire on Transportation Issues, Patterns, and Improvements (Summer 2003)

D. Area Transportation Issues

10. As a motorist, do you experience any problems on roads in and around the Park?	a. Yes	b. No	Other response	Blank	Total
Number	18	29		5	52
Percent	35%	56%	0%	10%	100%

If yes, please describe the problem(s) and the location or mark the location on the attached map. Brief Description.	Survey with Comment	Blank	Total
Number	20	32	52
Percent	38%	62%	100%

Comments:

Traffic Impact Study Area

Traffic Operations

Busy traffic getting onto bypass

Traveling west on 2A is difficult due to poorly timed lights. Many people turn left on 27 then right on 146 to reach I-75.

Congestion and apparently mis-timed traffic signals. [Battlefield Parkway]

Excessive wait times at traffic light (US 27 @ SR2). Some Park roads are in dire need of paving. [Intersection US 27 and SR 2, see map.]

2A-27 Bypass intersection lane change to come into Park.

Access

No entrance to hospital. [McFarland Gap Rd]

Osburn Closing of Barn Circle as an access to McFarland Rd.

getting onto 27.

System Design/Maintenance

Some side roads do need resurfacing.

Subarea Transportation Plan Area (Chickamauga Battlefield)

Traffic Operations

Traffic moving too fast while either driving or walking in the park. Traffic light out of character & need for the park. [LaFayette Rd and Reeds Bridge Rd]

Variety of traffic i.e., Visitors trying to view Park vs. locals trying to make time.

Would like to see speed limit increased at least 5 MPH.

Speed limit is rather low. Please increase to 45 MPH (Hwy 27 through).

Heavy traffic into Park on LaFayette Rd. Going too fast.

Speed.

Speed limit in Park reduced on 27 from 45-35-30.

Speeding cars. [LaFayette Rd]

Too many cars traveling too fast. [LaFayette Rd. and Reeds Bridge Rd.]

System Design/Maintenance

Terribly rough, bumpy roads in sections, see map.

They are all in very, very bad shape

Location	Survey with Comment	Blank	Total
Number	6	46	52
Percent	12%	88%	100%

Locations:

LaFayette Rd and Reeds Bridge Rd.

McFarland Gap Rd.

Battlefield Parkway

LaFayette Rd.

Intersection US 27 and SR 2, see map.

LaFayette Rd. and Reeds Bridge Rd.

Chickamauga and Chattanooga National Military Park
Traffic Impact Study and Subarea Transportation Plan
Questionnaire on Transportation Issues, Patterns, and Improvements (Summer 2003)

11. As a cyclist, do you experience any problems on roads or trails in and around the Park?	a. Yes	b. No	Other response	Blank	Total
Number	5	21	9	17	52
Percent	10%	40%	17%	33%	100%

If yes, please describe the problem(s) and the location or mark the location on the attached map. Brief description	Survey with Comment	Blank	Total
Number	9	43	52
Percent	17%	83%	100%

Comments:
Subarea Transportation Plan Area (Chickamauga Battlefield)
Traffic Operations
Cars going too fast. Drivers not very courteous. [Dyer Rd., Alexander Bridge Rd.]
Still too much traffic on Lafayette Road to cycle comfortably (but it is better than it used to be).

System Design/Maintenance
No bike lanes [Majority of park]
Not enough shoulder for bicycles on McFarland Gap Rd & Reed's Bridge Rd.
Trail markers have changed.

Other
Not a cyclist.
N/A
N/A
N/A
N/A

Location	Survey with Comment	Blank	Total
Number	2	50	52
Percent	4%	96%	100%

Locations:
Majority of park
Dyer Rd., Alexander Bridge Rd.

Chickamauga and Chattanooga National Military Park
Traffic Impact Study and Subarea Transportation Plan
Questionnaire on Transportation Issues, Patterns, and Improvements (Summer 2003)

12. As a pedestrian, do you experience any problems in and around the Park?	a. Yes	b. No	Other response	Blank	Total
Number	6	30	3	13	52
Percent	12%	58%	6%	25%	100%

If yes, please describe the problem(s) and the location or mark the location on the attached map. Brief description	Survey with Comment	Blank	Total
Number	10	42	52
Percent	19%	81%	100%

Comments:

Subarea Transportation Plan Area (Chickamauga Battlefield)

Traffic Operations

Traffic moving too fast and too much commuter traffic [LaFayette and Glen Kelly Rd]
In park, traffic moves too fast. Dangerous for visitors and children.
Traffic speed on LaFayette Rd.
Same as above (Too many cars traveling too fast.) [LaFayette Rd. and Reeds Bridge Rd.]

System Design/Maintenance

No ped. lanes on main roads
Not enough shoulder for pedestrians on LaFayette, McFarland Gap and Reed's Bridge Road.

Other

N/A
N/A
N/A
N/A

Location	Survey with Comment	Blank	Total
Number	2	50	52
Percent	4%	96%	100%

Locations:

LaFayette and Glen Kelly Rd
LaFayette Rd. and Reeds Bridge Rd.

Chickamauga and Chattanooga National Military Park
Traffic Impact Study and Subarea Transportation Plan
Questionnaire on Transportation Issues, Patterns, and Improvements (Summer 2003)

E. Future Conditions

13. Within the Chickamauga Battlefield unit of CCNMP, what would you change about the transportation systems, facilities or services?	Survey with Comment	Blank	Total
Number	35	17	52
Percent	67%	33%	100%

Comments:

Traffic Impact Study Area

Access

Tie bypass into Chattanooga better. Complete Borkholden Gap Extension to help Dade Co.
Encourage travel through the Park instead of discouraging it. McFarland Rd. should be removed from the Park system.

Subarea Transportation Plan Area (Chickamauga Battlefield)

Traffic Operations

Remove the stop light. Get commuter traffic out. Educate the local communities of why the park is there and its significance. Slow traffic down & maybe remove hard surfaces on some roads to be more "natural" of what it was in 1863. Close-off some entrances to the Park.
Increase speed limit 5 MPH.
Up speed limit to 40 MPH.
Raise speed limit to 40.
Yes, increase speed limit.
Lower speed limit. More stop signs to discourage through traffic.
Raise the speed limit to 45.
Make traffic move slower. Try to make traffic flow around Park rather than through. I'm sure Park staff knows what traffic flow would benefit.
Lower the speed limit on LaFayette Rd. Prohibit commuters.
Lower the speed limit to 27 MPH.
Increase speed limit slightly.

Access

Bus or van system.
Entrance to LaFayette Rd. S. into Visitor's Center awkward.
Do all we can to get pass through traffic off of the Park.

System Design/Facilities/Maintenance

Add horse facility on east side. Add bike and ped. lanes throughout Park.
More bike trails.
Reduce width of old US 27 & grass shoulders to encourage slower traffic.
More locations for restrooms, etc. and camping facilities.
Build small off-road exits and parking.
More bike lanes.
Paved walking/bike paths.
Pave Jay's Mill Road, Viniard-Alexander Road, and the road that enters the Park at the southwest corner.
More places to hold picnics and more parking spaces to enjoy the closer convenience to walking trails.
Widen LaFayette Rd. Raise the speed limit. Repair the roads.
Increase road shoulder size. Add porta-potties on the south side, east side, and west side of Park.

Other

Nothing
Nothing
None.
None.
Nothing.
Nothing.
Not anything.
N/A

13a. Within the Chickamauga Battlefield unit of CCNMP, what would you change about how Park visitors access or circulate around the Park?	Survey with Comment	Blank	Total
Number	29	23	52
Percent	56%	44%	100%

Comments:

Traffic Impact Study Area

Access

Make traffic w/ Barnhardt Cir. And Ft. Oglethorpe more conducive to tourism and businesses within Ft. Oglethorpe.
Encourage the use of historic areas in the City of Ft. Oglethorpe
The Gateways to the Park really need to be addressed for aesthetics & appeal to visitors to get visitors to stay in the area towns, and to have them leave with a positive experience.

Subarea Transportation Plan Area (Chickamauga Battlefield)

Traffic Operations

Maybe have more 1-way roads & loop routes for the visitor.
Sometimes crossing within the Park is difficult.
More one-ways and stop signs. Lower speed on LaFayette Rd. More bike/walking lanes.
One-way traffic. Lower speed limit.
Give Park visitors right-of-way over commuters.

Access

Provide train/overland vehicle for guided tour from the City of Chickamauga Depot. Multi-use trail beside railway from Chickamauga to Battlefield.
Better maps.
Keep pass through traffic at a minimum.

System Design/Facilities/Maintenance

Provide bike lanes on old 27.
Better signs. Re-pave rough roads.
Make McFarland Rd 4 lanes
Same as above. [Widen LaFayette Rd. Raise the speed limit. Repair the roads.]
Provide shoulders along paved roads.

Other

Excellent.
OK
OK
Wouldn't change.
Nothing
No change.
Nothing
Nothing.
Nothing.
Nothing.
No.
N/A
N/A

13b. Within the Chickamauga Battlefield unit of CCNMP, what would you change about how non-Park users access or circulate through the Park?	Survey with Comment	Blank	Total
Number	31	21	52
Percent	60%	40%	100%

Comments:
Subarea Transportation Plan Area (Chickamauga Battlefield)
Traffic Operations
Raise speed limit.
Improved signage.
Minimize through traffic! Make any through traffic move slowly.
Slow them down. Less access points. More stop signs.
Slow them even slower.
I wish they would drive slower and with caution.
Raise the speed limit.

Access
Allow no commuter traffic. Visitors here to walk, bike, or jog are fine but it's the heavy commuter traffic at speeds that impacts the experience.
Make it more inconvenient to use Park as short cut.
Close LaFayette Road near intersection with U.S. 27 (south end of Park)
Reduce number of ways for getting into the Park.
Prohibit through traffic.
Eliminate non-Park users access to Park. Need to improve commuter routes outside Park.
No more restrictions of four wheel vehicles.
Encourage them to find alternatives to going through the Park.

System Design/Facilities/Maintenance
Make McFarland Gap more user friendly to get traffic from bypass to south end of LaFayette Rd.
More and better pull-off spaces for visitors to avoid conflict with through traffic.
Make maps at different locations showing where you are.
Same as above. [Widen LaFayette Rd. Raise the speed limit. Repair the roads.]

Other
Limit or prohibit commercial development on the Park side (Inside) the new 27 bypass.
OK
Nothing
No change.
Nothing
No change.
Nothing.
None.
Nothing.
No.
N/A
N/A

13c. How could the visitor experience at the Chickamauga Battlefield unit of CCNMP be improved through changes in transportation systems, facilities or services?	Survey with Comment	Blank	Total
Number	35	17	52
Percent	67%	33%	100%

Comments:

Traffic Impact Study Area

Promote local businesses with visitors.

Access

Refer to 13A. [The Gateways to the Park really need to be addressed for aesthetics & appeal to visitors to get visitors to stay in the area towns, and to have them leave with a positive experience.]

Subarea Transportation Plan Area (Chickamauga Battlefield)

Traffic Operations

Different signage to locate sites off LaFayette w/o getting tour map from Visitor's Center.
Reducing volume and speed of traffic of Lafayette Rd.
Slower traffic. More opportunity for stopping and parking and walking. More pedestrian friendly.
Lower the speed limit to accommodate the visitors.
Same as above. [Slow them even slower.]

Access

Request that we be able to continue to travel through the Park to other destinations, even with the reduced speed.
Use of electric buses for group tours.
Through 13A, above. [Provide train/overland vehicle for guided tour from the City of Chickamauga Depot. Multi-use trail beside railway from Chickamauga to Battlefield.]
Have a bus bring you in from Chattanooga.
Less local use of the Park.
Elimination of commuters from Park.
Parking and access to visitor center is limited and somewhat awkward. Expand and/or improve access.
By using a bus or van system, the driver could inform about the different battles that were fought.
Keep pass through traffic at a minimum; needs to be more pedestrian friendly.

System Design/Facilities/Maintenance

Develop better side roads like the By-pass so commuters have other options to use & not to go through the Park. Then look at the park in its 1-way & loop roads.
Make more parking facilities on City side of Park so visitors can bike and walk easily into south side of LaFayette Rd. businesses.
More off-road parking.
Implement guided tours.
Provide occasional benches for pedestrians and visitors to sit. Log benches could be utilized at very little expense.
See #13. [More places to hold picnics and more parking spaces to enjoy the closer convenience to walking trails.]
Smoother roads.
Same as above.[Widen LaFayette Rd. Raise the speed limit. Repair the roads.]
Larger shoulder would provide safer environment. Porta-potties would improve visitor experience for more hiking.

Other

Strictly control land use in vicinity of the Park. Adopt sign, lighting and landscape standards.
Have more reenactments.
Leave as is.
OK
It's OK.
Nothing.
I don't know.
Do not know.
N/A
N/A

13d. How could the preservation of cultural or natural resources at the Chickamauga Battlefield unit of CCNMP be improved through changes in transportation systems, facilities or services?	Survey with Comment	Blank	Total
Number	27	25	52
Percent	52%	48%	100%

Comments:

Subarea Transportation Plan Area (Chickamauga Battlefield)

Traffic Operations

Less traffic and slower traffic could make entire visitor experience more positive.
Lower the speed limit. Make the roads more like the historic roads. Make the roads narrow and use chip and seal instead of asphalt.
Ditto. [Slow them even slower.]
Keep one-way roads.

Access

Close more roads to road traffic so maybe it's a trail for people to walk & experience. Open up wooded areas to what it was like in 1863.
Develop the roads as they were in 1863.
Eliminate non-Park users!
Same as 13a. (Keep pass through traffic at a minimum.)

System Design/Facilities/Maintenance

Add additional bike trails in the heart of the wild areas (not paved roadways) to encourage recreational bike riders in the Park.
Through 13A, above. Lower speed limit on LaFayette Rd. [Provide train/overland vehicle for guided tour from the City of Chickamauga Depot. Multi-use trail beside railway from Chickamauga to Battlefield.]
More people walking, jogging, bicycling means more real exposure to the historic aspects of Park.
Larger shoulder would slow motor vehicle traffic thereby limiting volume of traffic. This would reduce the emissions of motor vehicles that can contaminate the resources.

Other

Activities should be in line with the mission of the Park.
Enhance public knowledge of Park & surrounding sites as historical through education and additional museums.
Don't let the area become "just another commercialized highway."
Reduce noise & congestion. Improve safety.
Leave as is.
Do not know.
It couldn't.
OK
OK
It's OK.
None.
Don't know.
N/A
N/A
N/A
?

14. In the area outside the Chickamauga Battlefield unit of CCNMP, what would you change about the transportation systems, facilities, or services?	Survey with Comment	Blank	Total
Number	28	24	52
Percent	54%	46%	100%

Comments:

Traffic Impact Study Area

Traffic Operations/Wayfinding

Mileage indicators on I-75 2A exit sign; long drive to LaFayette Road.
Better signage to steer through-traffic to By-pass. Keep rural roads leading into Park.
No suggestions other than signage needs to be improved around the Park.

Access

Traffic is deferred away from Downtown Ft. Oglethorpe and this is hurting local businesses that depend on traffic flow.
Improve some side street access for safety.
More and better roads with more Park access and pull offs.
Make Hwy 27 as attractive for use as possible.

System Design/Facilities/Maintenance

Improve side roads that also see heavy traffic such as Dietz/Burning Bush, Three Notch Roads. Have a plan and implement it! Too much development & can't see any planning or real zoning going on especially in Catoosa County!
Request road be maintained well.
Add bike facility to infrastructure to get to the Park.
Improvements to Osburn School Rd.
Maybe the by-pass should be improved to a belt-way around the Park.
Improve transportation routes around Park.
Improve commuter roads outside Park.
Provide a bypass on the east side.

Urban Design

Enhance and beautify LaFayette Rd. and other primary roads entering Park to promote tourism and local interest in area and ignite interest of businesses to area.
Streetscaping approach to Park. Encouraging visitor-related businesses between cut-off to 27 relocation and Park entrance. Incorporation of Post historic area into planning.
Beautify LaFayette Road as an entrance to Park.
Improve the street scene entering the Park. Encourage use of the by-pass.

Visitor Amenities

Provide more modern visitor's services in the vicinity of Chickamauga. Need a small hotel or bed/breakfast.
Encourage visitors to Battlefield Park to include historic resources outside Park in visit--brochures, signage, trail destination from I-75--bicycle trails and trailhead.

Other

OK
Nothing.
Nothing.
Not anything.
N/A
N/A
N/A

Chickamauga and Chattanooga National Military Park
Traffic Impact Study and Subarea Transportation Plan
Questionnaire on Transportation Issues, Patterns, and Improvements (Summer 2003)

F. Other Comments

15. Do you have any other comments regarding the transportation study or transportation needs in or around the Chickamauga Battlefield unit of CCNMP? You may use attached map to show where there are transportation issues you feel should be addressed.	Survey with Comment	Blank	Total
Number	23	29	52
Percent	44%	56%	100%

Comments:

Traffic Impact Study Area

Has the by-pass been included in the study? Do we know how many people are using the by-pass?

When changes are made, consider what changes will also do to existing merchants & businesses around Park. We love the Park, but we want everyone to be considered.

Traffic Operations/Wayfinding

Red lights in Downtown Ft. Oglethorpe are not set correctly. The turn signal will hold and no traffic will be there to use it period causing traffic to wait unnecessarily

City of Ft. Oglethorpe; request for GA DOT- left turn installed on traffic light at intersection of Battlefield Pkwy and Van Cleve Street. Very high traffic at intersection.

Due to the by-pass being placed on the west side of the Park (most people traveling from the south are trying to get east to I-75), many secondary roads through residential areas are now over-crowded. People traveling from the south tend to use Long-Hollow Rd. to Burning Bush Rd. to get to I-75. By taking the by-pass, you are traveling approx. 2 miles west before heading east again.

Park Bypass seems to be working well. Saves time and enhances Park as a historic destination.

I was opposed to road around west side of Park because of cost; 6 million through Park, 69 million around.

Signage should be clearer going to and from the Park.

Some intersections along new Hwy 27 are extremely hazardous-especially at Osburn Rd. and 27 when the median grass is high. A road from Davis Rd. to connect to Vittetoe would help traffic from that community, and it would reduce traffic flow on Long Hollow. Thanks for asking.

Urban Design

Protect surrounding nature of Ft. Oglethorpe--greenery, 2-lane roads, residential areas. Protect against strip development and inundation of 4-lane roads.

Historic Resources/Visitor Amenities

Battlefield Parkway at LaFayette Rd. needs a major site to direct traffic south on LaFayette Rd to start tourist into the Park direction & enhance the City's downtown development area. Work w/City on developing a tour that involves the City and the Park w/ major sites being in a natural flow to coordinate & not have such a break between City & Park.

Need to include City of Chickamauga as a Gateway community. 66% of the Union Army marched through the City of Chickamauga (Crawfish Springs, Georgia) to the Battle of Chickamauga. Conduct one of the Traffic Impact Study meetings at the City of Chickamauga.

Incorporate historic resources outside Park boundary into planning study. Include local resources and expand "destination." Work with RDC planner and State Historic Preservation Division to expand master plan for historic resources.

Subarea Transportation Plan Area (Chickamauga Battlefield)

Traffic Operations/Wayfinding

Increase the speed back to the original speed before the bypass so traffic would continue through the Park as before the bypass.
Bicyclists often ride in middle of road.
No restriction in traffic flow through Park.
McFarland Rd. to Old 27 should be ___ the Park for local speed control.
1. The bike-way along Glenn-Kelly Rd. should be extended north as a paved trail across the field and across the foot bridge to the visitor center parking lot. This would provide a much better way for cyclists to travel through the Park from the visitor center, rather than forcing them onto Lafayette Rd. at the point of highest traffic congestion. 2. If your destination is downtown Chattanooga or Rossville, the bypass is the way to go. However, if your destination is Ft. Oglethorpe, it may be just as quick to go north on Lafayette Rd. through the Battlefield, avoiding congestion at the US 27-SR 2 intersection (assuming you are coming from the south).

System Design/Facilities/Maintenance

It either need to be repaired, widened, roads fixed, or shut the place down.

Other

Hurry! Times wasting!
N/A
N/A
No.

Other

5 of 52 (10 percent) survey respondents annotated or made comments on map.
31 of 52 (60 percent) survey respondents provided identifying contact information.

Additional Comments

3 of 50 (6 percent) survey respondents added comments to the multiple choice questions.
A-1 COMMENT: Not often
B-5 COMMENT: Going through the park but use it more often to get to various areas of the park
B-6 COMMENT: I work in the Park and I report to the maintenance compound.

Appendix B
Chattanooga MinUTP Model Update and Refinement

Update and Refinements

The current validated travel demand model for the Chattanooga Urban Area Metropolitan Planning Organization (MPO) uses the MinUTP modeling platform and has a base year of 2000. The MPO model includes the entire study area for the Chickamauga and Chattanooga National Military Park (CCNMP) traffic impact analysis and subarea transportation plan. In order to simulate travel patterns more effectively inside the Park and surrounding areas, the model was refined within the study area. The construction of the US 27 Relocation west of the Park was completed in the Fall of 2001. As a result, travel patterns in and near the Park were impacted. To reflect travel patterns on the ground today, the 2000 model was updated to 2003 within the study area, which included the addition of the US 27 Relocation. In addition, the following refinements were made to the new 2003 base year model for the purposes of this study:

- Included US 27 Relocation
- Included 2002 and 2003 traffic counts (after US 27 Relocation)
- Refined roadway network
- Reviewed and refined area type coding
- Reviewed and refined facility type coding
- Reviewed and refined lane coding
- Refined traffic analysis zone (TAZ) structure and centroid connectors
- Interpolated 2003 socioeconomic data
- Interpolated 2003 external trip volumes
- Added post-processing steps in model script to calculate statistics for air quality analysis

These refinements can be categorized as network, TAZ, input data, and post processing refinements and are discussed below in further detail.

Network Refinements

In addition to the inclusion of US 27 Relocation in the 2003 base year model, a new attribute field was added to the 2003 model to represent available 2002 and 2003 traffic counts within the study area provided by the Georgia Department of Transportation (GDOT). By adding a new attribute field, the 2000 counts already included in the model were retained. The original 2000 model roadway network within the study area was minimal. To better simulate travel patterns within the study area, roadways were added to the model network. The area type, facility type, and lane coding was reviewed and refined as part of the updated 2003 model based on field observations. Since link characteristics were further refined during the model validation process, maps of these refinements are provided in the Model Validation section of this report.

Traffic Analysis Zone Structure Refinements

Prior to refinement, the model only included two TAZs within the Park boundaries (zones 185 and 197). These two TAZs were split into a total of eight TAZs representing the Park; zones 185, 197, and new internal zones 222-227. Zone 222 represents the Park Visitor Center and zone 225 represents the Park maintenance buildings. The other zones represent attraction points within the Park, such as picnic areas and areas along the auto tour. Zone 221 was added to the model southwest of the intersection of the US 27 Relocation and LaFayette Road south of the Park to represent the new Food Lion shopping center. The number of employees included in the zonal input data for zone 221 was derived from the average number of Food Lion employees in the Florida InfoUSA database. Zone 185 was further split to include zone 228 in the area northwest of the Park between the US 27 Relocation and Jenkins Road south of McFarland Gap Road. With the exception of employees, 75 percent of the remaining socioeconomic data in zone 185 (dwelling units, population, labor force, and cars owned) was moved to zone 228 to reflect residential land use in the area. All of the employment from zone 185 was moved to zone 228 to represent employment in the area.

Since the unrefined model did not include any dummy zones (zones with no socioeconomic data reserved for later use), the TAZs were renumbered to accommodate the seven new zones within the Park and two new zones surrounding the Park. In addition, seven dummy zones (zones 229-235) were added to the network in case further refinement was needed as part of the validation process. Table 1 provides an equivalency table for the old zones that were renumbered. Figure 1 illustrates the refinement of the TAZ boundaries within the Park. In addition, the location and number of centroid (zone) connectors within the TAZs outside the Park boundary but inside the study area were refined as deemed appropriate.

Input Data Refinements

As part of the update of the 2000 model to 2003, the 2000 and 2025 socioeconomic data were interpolated to 2003. Figure 2 compares the socioeconomic data control totals within the large study area between 2000, 2003, and 2025 by each of the model's socioeconomic production and attraction variables (number of housing units, total population, labor force, cars owned, and workers).

Like the socioeconomic data, the 2000 and 2025 external-external trip data and internal-external trip data were also interpolated to 2003. External-external trip data represents external zone to external zone trips which are identified as trips beginning and ending outside the Chattanooga regional model or through trips. Internal-external trips are trips with one trip end outside the regional model and one trip end inside the regional model. Figure 3 compares the external-external trip volumes by each external origin zone between 2000, 2003 and 2025.

Post Processing Statistics

In order to evaluate the impact of the future build alternative on air quality in the region, post-processing steps were added to the model script to calculate air quality statistics. These statistics include vehicle miles traveled (VMT), vehicle-hours traveled (VHT), and congested speed by area type and facility type. These statistics will be evaluated as part of Task 3 of this study.

Table 1: Zone Equivalency Table

Old Internal Zones	New Internal Zones
185	221
185	222
185	223
185	224
185	225
197	226
197	227
185	228
	New Internal Dummy Zones
	229
	230
	231
	232
	233
	234
	235
Old External Zones	**New External Zones**
221	236
222	237
223	238
224	239
225	240
226	241
227	242
228	243
229	244
230	245
231	246
232	247
233	248
234	249
235	250
236	251
237	252
238	253
239	254
240	255
241	256
242	257
243	258
244	259
245	260
246	261
247	262
248	263
249	264
250	265
251	266
252	267
253	268

Figure 1: Refined Traffic Analysis Zone Boundaries within Park

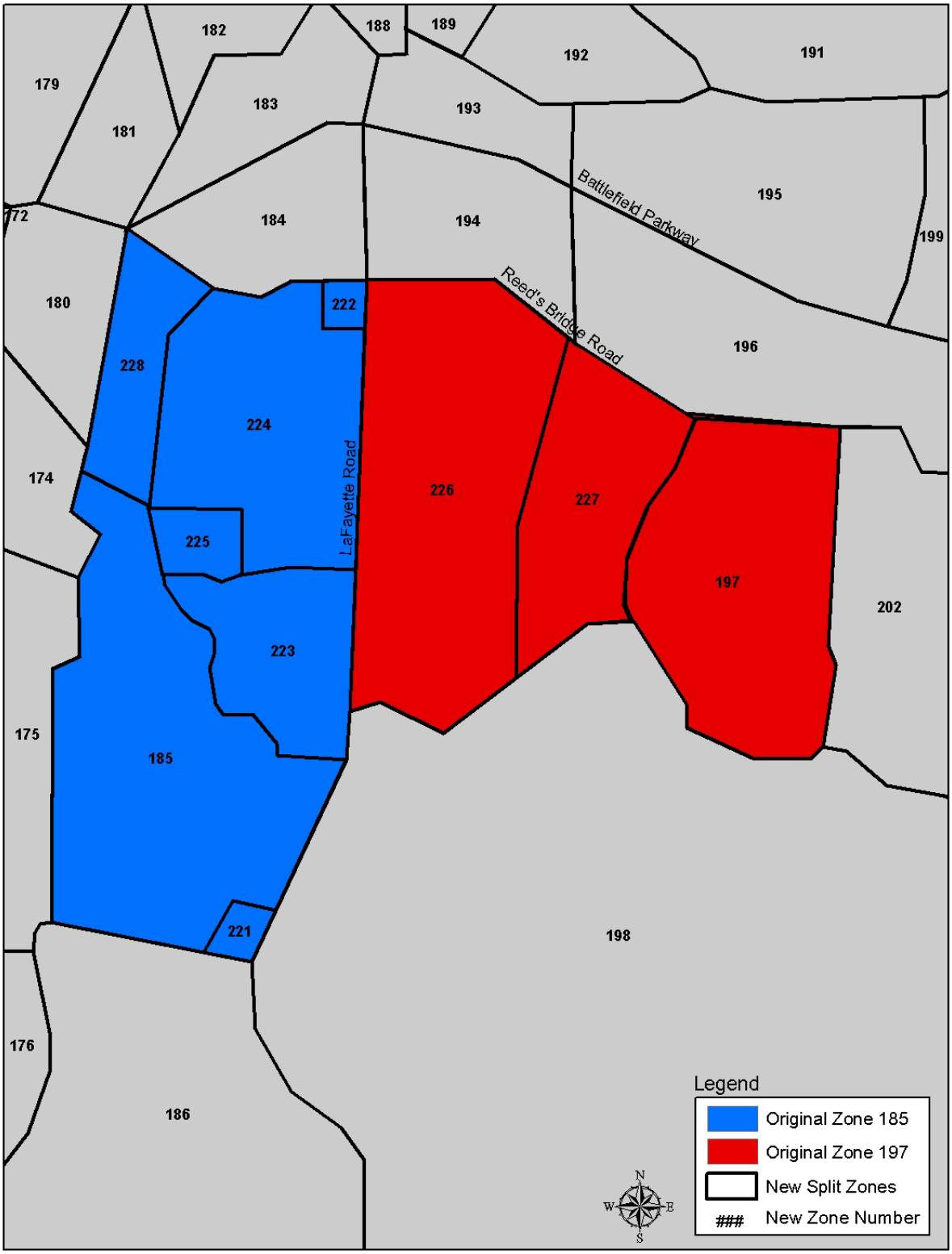


Figure 2: Comparison of Socioeconomic Data Within Study Area by Model Year

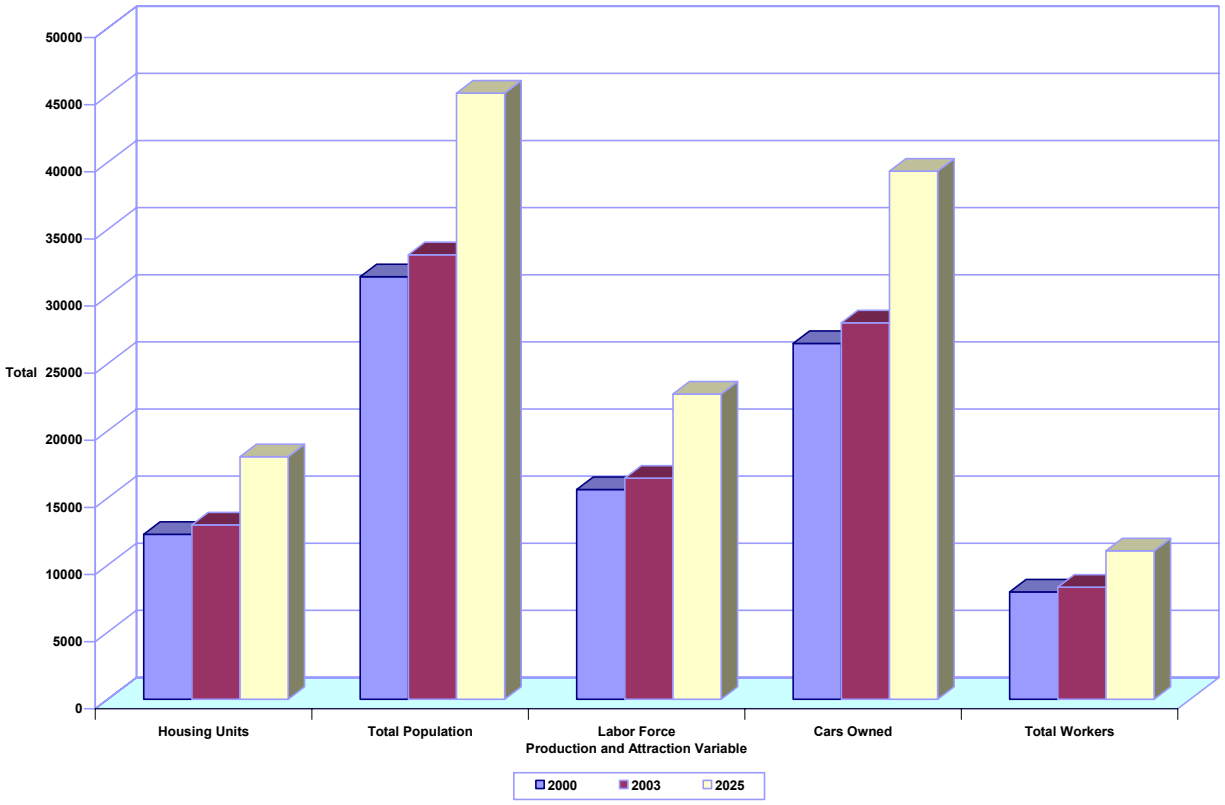
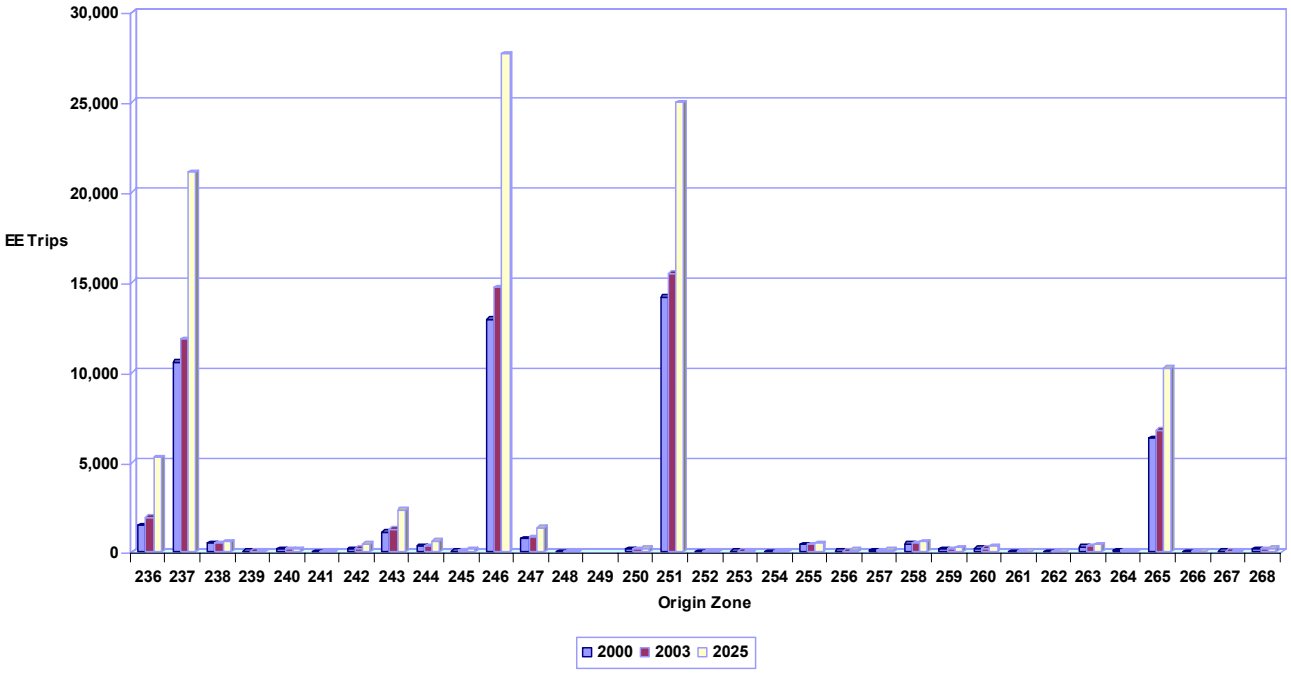


Figure 3: Comparison of External Origin Zone Volumes by Model Year



Model Validation

Once the above refinements were made to the updated 2003 base year model, the following refinements and adjustments were performed throughout the validation process to simulate 2003 travel patterns as accurately as possible:

- Added curvature to roadway network
- Adjusted facility type coding
- Added a sixth area type to represent the Park
- Edited centroid and centroid connector locations
- Adjusted speeds in speed lookup table
- Adjusted capacities in capacity lookup table
- Added and adjusted turn penalties
- Added special generators to represent Park visitors
- Reviewed external trip volumes

Like the model update and refinement process, the validation measures performed can be categorized as network, TAZ, and input data validation measures.

Network Refinements

As part of the validation process, model links were edited to represent curvature in the roadways. Representing the curvature in the roadways better reflects the distance of the links thereby distributing trips more accurately across the network. The facility types of roadways within the study area were reviewed to determine if they would be better represented by a different facility type in order to validate the model. As a result, the facility type of Three Notch Road was changed from a collector to a minor arterial south of Battlefield Parkway. Three Notch Road was already classified as a minor arterial north of Battlefield Parkway. Figure 4 illustrates the refined facility types of roadways within the study area.

In order to isolate speeds and capacities within the Park boundaries, a sixth area type category was added to the model titled "Park", with an area type code of '6'. The Chattanooga model utilizes speed and capacity lookup tables based on the area type and facility type of links. MinUTP imposes a maximum SPDC and CAPC value of 63. The SPDC and CAPC variables represent speed class and capacity class, respectively, in the format of a two-digit code representing the area type and facility type of the link. Prior to refinement, the model included five area types and eight facility types, resulting in values of 1 through 58, where the first digit represents area type and the second digit represent facility type. Due to the maximum permitted value of 63, the facility type codes within the Park area type were renumbered to accommodate the three facility types (centroid connectors, collectors, and minor arterials). Area type and facility type code definitions are included in the model script file (TEST.DRV) in the appendix of this document. By designating a new area type for the Park, the speeds and capacities could be lowered inside the Park to simulate travel patterns more accurately. Figure 5 illustrates the refined area types of roadways within the study area.

Figure 4: 2003 Facility Types Within Study Area

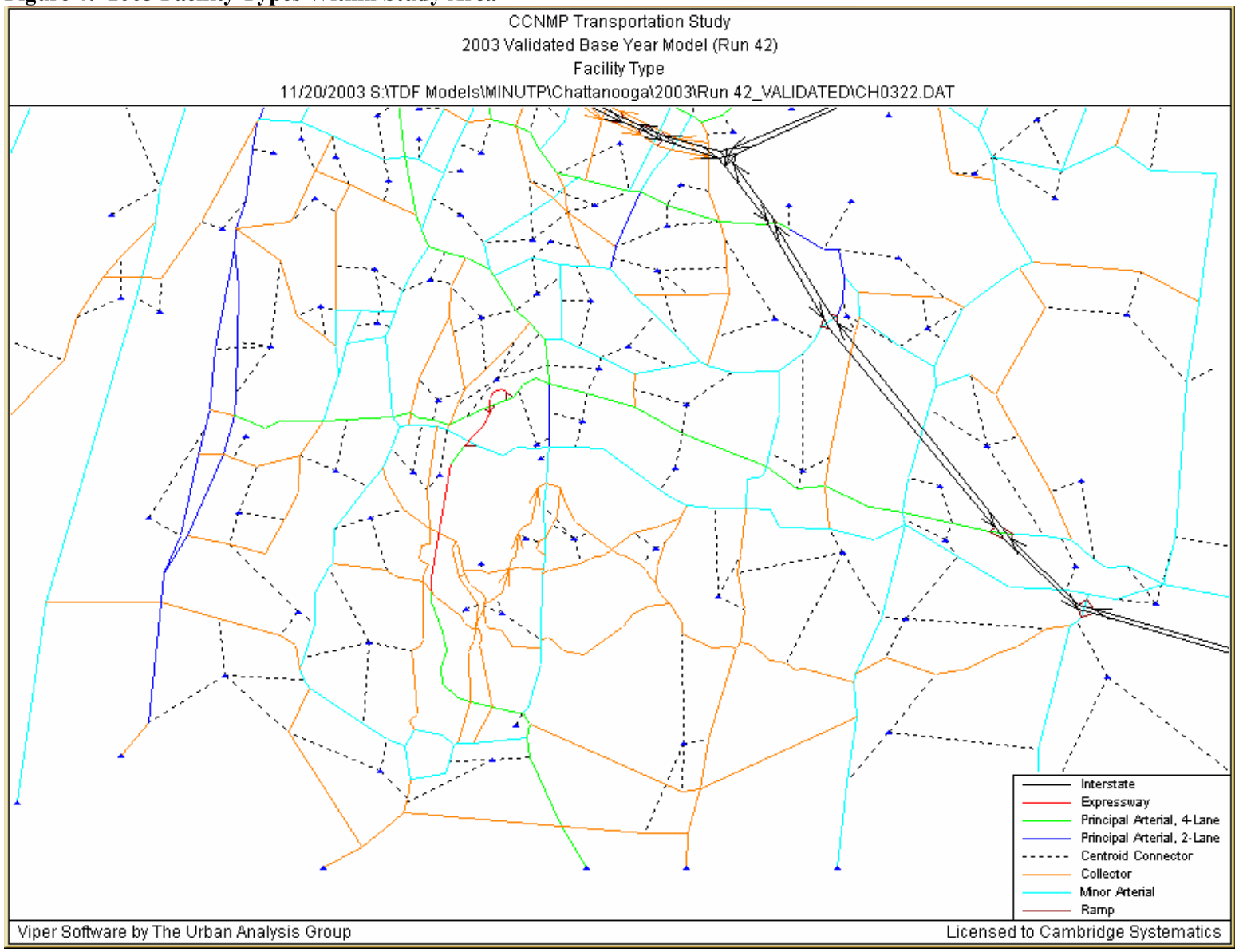
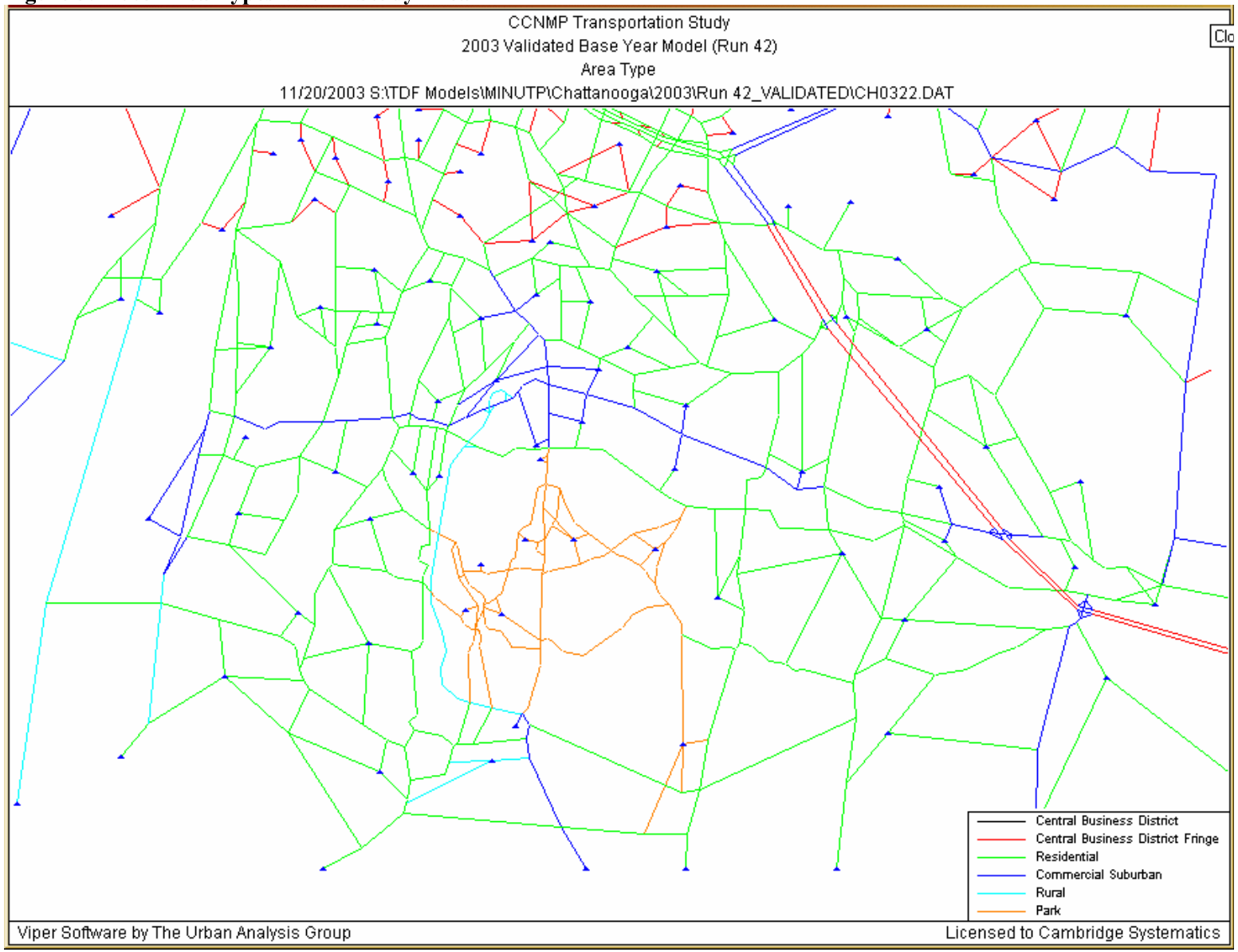


Figure 5: 2003 Area Types Within Study Area



Traffic Analysis Zone Structure Edits

To more accurately load trips onto the roadway network, the locations of some centroids, as well as the number and location of some centroid connectors, were also edited. Centroids are nodes in the model network representing a TAZ. Centroid connectors are links in the model network that load the trips generated by the socioeconomic data within the TAZ to the roadway networks. Centroid connectors typically represent points of access to the roadway, such as a local roadway or driveway access. Figure 6 illustrates the centroid connector changes.

Input Data Refinements

As discussed above, the inclusion of a sixth area type to represent the Park allowed the adjustment of speeds and capacities within the Park. In addition, speeds were adjusted outside the Park to improve the validation of the model. When feasible, speeds within the same area type were adjusted relative to each facility type. Meaning, the speed for a minor arterial facility type would be lower than the speed designated for a principal arterial. However, in a few instances, the designated speeds are not hierarchical to each other within the same area type, as the model within the study area would not validate otherwise. The capacities within the new Park area type were based on the capacities of the rural area type with a ten percent reduction to account for additional roadway curvature and low design speeds.

To improve the validation, turn penalties were added to the model at the two railroad crossings on the west side of the Park, the narrow bridge on Alexander Bridge Road on the east side of the Park, the bridge on Reed's Bridge Road east of the Park, and at external zone 257 on Burning Bush Road south of the Park. The values of the turn penalties were modified throughout the validation process. With the exception of the bridge on Reed's Bridge Road and external zone 257 on Burning Bush Road, the final turn penalties ranged from 0.2 minutes to 1.0 minute. The bridge on Reed's Bridge Road had a turn penalty of 2.5 minutes and external zone 257 had a turn penalty of 2.0 minutes. Turn penalties were used to discourage, not prohibit, specific turning movements at physical barriers (i.e. railroad crossings and bridges) and external zones where needed.

The socioeconomic data within the Park boundaries was redistributed based on the new zone structure within the Park as part of the update and refinement process. Out of the nine zones within the Park boundary, only two of them included employment data (Park Visitor Center and maintenance buildings). As a result, special generators were added to the model to attract trips to the Park. The special generators were calculated based on results from the roadside interview survey conducted as part of this study in July 2003. A factor of 4.76, derived from the *Gettysburg Study*, was used to convert the trips from the roadside interview survey, conducted between 2 p.m. and 7 p.m., to daily trips. The trips were then split among zones, trip purposes, and whether they were productions and/or attractions. All special generator trips were considered to be trip attractions. The home-based other purpose was used in all cases except the auto tour as this represents a nonhome-based activity with multiple stops. Table 2 lists the special generators by zone within the Park.

Figure 6: 2003 Roadway Network by Number of Lanes and Traffic Analysis Zone Structure Within Study Area

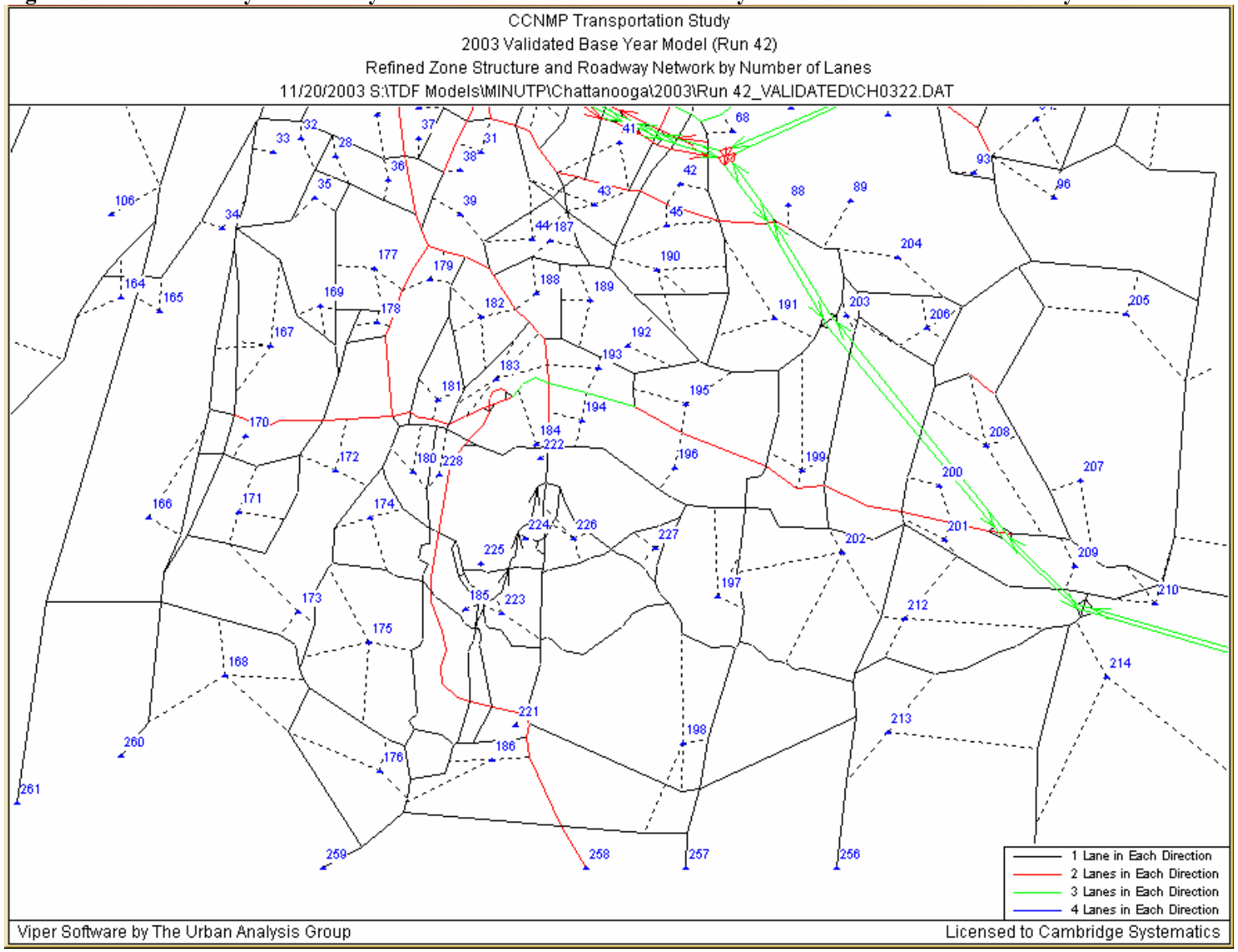


Table 2: Special Generators by Zone and Trip Purpose

Park Site	TAZ	Percent of Zone	Daily Trips	Trip Purpose
Visitor Center	222	100.0%	267	HBO
Picnic Sites	223	33.3%	24	HBO
Picnic Sites	224	33.3%	24	HBO
Picnic Sites	226	33.3%	24	HBO
Auto Tour	227	100.0%	162	NHB

Notes:
HBO = Home-Based Other
NHB = Non-Home Based

The interpolated 2003 external trip volumes were reviewed as part of the validation process. One of the validation runs included reduction of the external volumes south of the Park by three percent, representing the latest overall volume-to-count ratio of 1.03. However, the reduction in external volumes did not positively impact the validation of the model. As a result, the original interpolated 2003 external volumes were utilized in the final validation.

Screenlines and Volume-to-count Ratios

The variable used to measure the validation progress of the 2003 model was volume-to-count ratios. The volume-to-count ratio is the 2003 daily model volume divided by the 2003 daily traffic count collected in the field. Only 2002-2003 traffic counts within the project study area were included in the model. Traffic counts are the best representation of existing travel patterns. However, the model must be validated based on existing conditions prior to projecting future travel patterns. Prior to refinement, the model did not include any screenlines, cut lines, or cordon lines. Analyzing volume-to-count ratios along screenlines allows for a great level of detail in examining flows into, out of, and across geographic areas. This constitutes a great component of highway assignment as well as assisting in the examination of trip distribution. As a result, six screenlines, cut lines, or cordon lines were added to the model within the study area to assist with the validation process. Of these six screenlines, one screenline included a cordon measuring trips coming into and going out of the Park. Figure 7 represents the location of each of the seven cordon lines, screen lines, or cut lines.

The Florida Department of Transportation has established three ranges for measuring accuracy based on total counts comprising each screenline which are often used by other states. Screenlines that should be carrying less than 50,000 vehicles per day (VPD) should be within +/- 20 percent of traffic counts. Screenlines that should be carrying between 50,000 to 75,000 VPD should be within +/- 15 percent. Screenlines that should be carrying more than 75,000 VPD should be within +/- 10 percent.

A series of 42 model runs were completed which compared volume-to-count ratios by screenline, area type, facility type, and the overall ratio for the 2003 system. The results of the validated 2003 base year model (run 42) volume-to-count ratios by screenline, as well as a description of each screenline and the desired accuracy level, are found in Table 3. Table 4 and Table 5 represent volume-to-count ratios for the validated 2003 base year model by area type and facility type, respectively. Almost all of the volume-to-count ratios by area type and facility type are within the desired levels of accuracy. The overall volume-to-count ratio for the validated 2003 base year model is 1.01, which is within the +/- 5 percent typical standard for an acceptable overall system volume-to-count ratio. The volume-to-count ratios are based on those links with a 2002 or 2003 count in the model.

Figure 7: Map of Cordon Lines, Screenlines, and Cut Lines

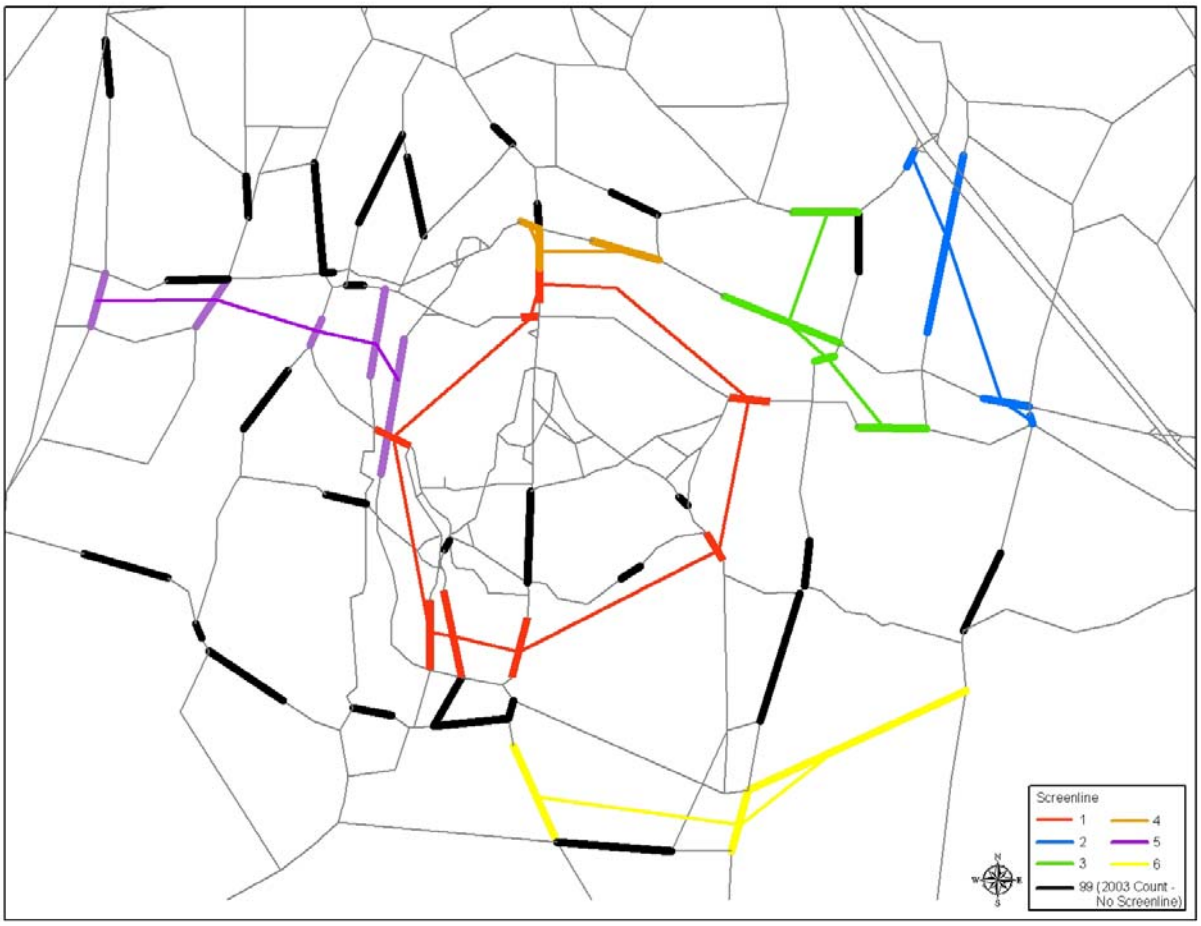


Table 3: Volume-to-Count Ratios by Screenline for Validated 2003 Model

Screenline	Description	CCNMP 2003 Total Volume	CCNMP 2003 Total Count	CCNMP 2003 V/Ct. Ratio	FDOT Accuracy Level**
1	Cordon Line Around Park	21,377	20,700	1.03	+/- 20%
2	East of Park West of I-75	53,463	44,300	1.21	+/- 20%
3	Immediately East of Park	35,648	52,600	0.68	+/- 15%
4	North of Park	62,185	63,300	0.98	+/- 15%
5	West of Park	42,293	44,900	0.94	+/- 20%
6	South of Park	17,919	23,400	0.77	+/- 20%
99*	MISC. COUNTS	209,679	190,100	1.10	+/- 10%
Total/Average		**442,564**	**439,300**	**1.01**	+/- 5%

Notes:
Links without 2002 or 2003 counts were not included
** Screenline 99 includes all links with counts not located on a screenline.*
*** FDOT Accuracy Level based on <50k VPD = +/- 20%, 50k-75k = +/- 15%, >75k = +/- 10%*

Table 4: Volume-to-Count Ratios by Area Type (AT) for Validated 2003 Model

MinUTP Code	AT Description	Links w/ Counts 2003 CCNMP	Accuracy Level
1	CBD	n/a	+/- 15%
2	CBD Fringe	n/a	+/- 15%
3	Residential	1.05	+/- 15%
4	Commercial Suburban	0.96	+/- 15%
5	Rural	1.04	+/- 15%
6	CCNMP (Park)	0.88	+/- 15%

Notes:
Links without 2002 or 2003 counts were not included

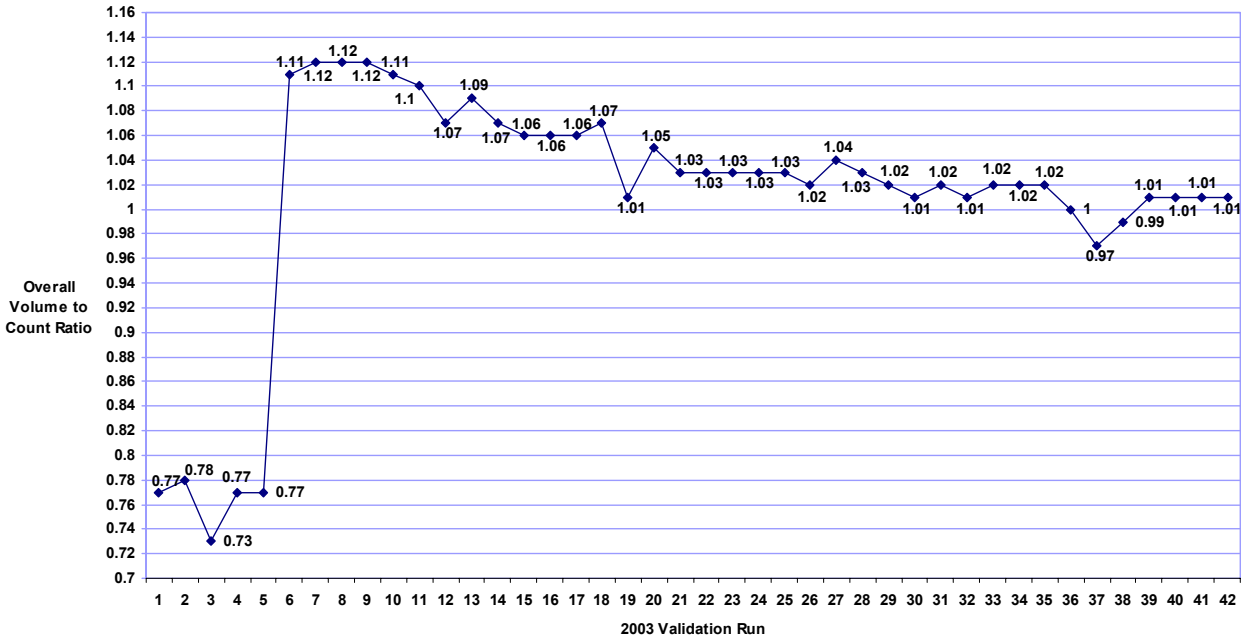
Table 5: Volume-to-Count Ratios by Facility Type (FT) for Validated 2003 Model

MinUTP Code	FT Description	Links w/ Counts 2003 CCNMP	Accuracy Level
1	Interstates	n/a	+/- 15%
2	Expressways	1.04	+/- 15%
3	Principal Arterial, 4-Lane	0.95	+/- 15%
4	Principal Arterial, 2-Lane	1.29	+/- 15%
6	Collector	1.19	+/- 15%
7	Minor Arterial	0.97	+/- 15%
8	Interstate Ramps	n/a	+/- 15%

Notes:
Links without 2002 or 2003 counts were not included

Figure 8 compares the overall volume-to-count ratios among each model run throughout the validation process. This line graph highlights the progress that was made over the course of validation.

Figure 8: Comparison of Overall Volume-to-Count Ratios by 2003 Validation Runs



Select Link Analysis

As discussed in the Task 1 report, a license tag origin and destination survey was conducted in May 2003 to determine the distribution of through (Non-Park) trips between the eight tag sites surrounding the Park. A select link analysis was conducted using the refined 2003 MinUTP model to compare against the results of the tag survey. The select link analysis was conducted by selecting each of the eight tag site links surrounding the Park in the model and specifying the possible link combinations for each origin and destination pair through the Park to determine the number of through trips using each link combination. The model provided an estimate on the number of trips going from tag site 1 to tag site 2, from tag site 1 to tag site 3, from tag site 1 to tag site 4, etc. In most cases, the model simulates conditions relatively close to the license tag survey. Unfortunately, some of the tag sites have low sample sizes regarding Non-Park trips from the tag survey. As a result, the model may simulate a different distribution at some sites that, although appearing to be logical, may not closely match the tag survey distribution results. The follows highlights the results of comparing the model distribution of through trips to the license tag survey distribution:

- The predominant movement from LaFayette Road south of the Park (tag site 4) is to LaFayette Road north of the Park (tag site 1) in both the model and the tag survey.

- The predominant movement from Alexander Bridge Road east of the Park (tag site 3) is to LaFayette Road north of the Park (tag site 1) in both the model and the tag survey.

- The predominant movement from Osburn Road southwest of the Park (tag site 6) is to LaFayette Road north of the Park (tag site 1) in both the model and the tag survey.

Although most of the movements compare relatively close between the model and the tag survey, there is a difference between the two sources for the movement between LaFayette Road north of the Park and McFarland Gap Road northwest of the Park. Of the through trips coming from LaFayette Road north of the Park (tag site 1), approximately 67 percent of them are going to LaFayette Road south of the Park (tag site

4) in the model. Although this is very logical, the license tag survey shows this movement as the second highest volume movement from LaFayette Road north of the Park at approximately 35 percent of the trips. The predominant movement from LaFayette Road north of the Park in the tag survey has a destination of McFarland Gap Road northwest of the Park (tag site 9) at approximately 51 percent of the trips. The model does not simulate any through trips coming from LaFayette Road north of the Park going to McFarland Gap Road northwest of the Park. The difference in results also applies to the reverse movement. Of the through trips coming from McFarland Gap Road northwest of the Park, approximately 39 percent of the trips are going to Reed's Bridge Road east of the Park and approximately 40 percent of the trips are going to Alexander's Bridge Road southeast of the Park in the model. Again, although this appears logical, the license tag survey demonstrates that most trips coming from McFarland Gap Road are going to LaFayette Road north of the Park, at approximately 79 percent of the trips.

It is expected that in reality, the results are somewhere between the model and tag results in instances where there are significant differences. This difference in through trips between McFarland Gap Road and LaFayette Road north of the Park is not a fatal flaw to the model or the tag survey but will be considered during alternative testing. The relatively sparse network and zone system of the existing Chattanooga MinUTP model outside the Park is at least partly responsible for these differences.

Traffic Volumes

2025 Socioeconomic Data with Existing +Committed Network

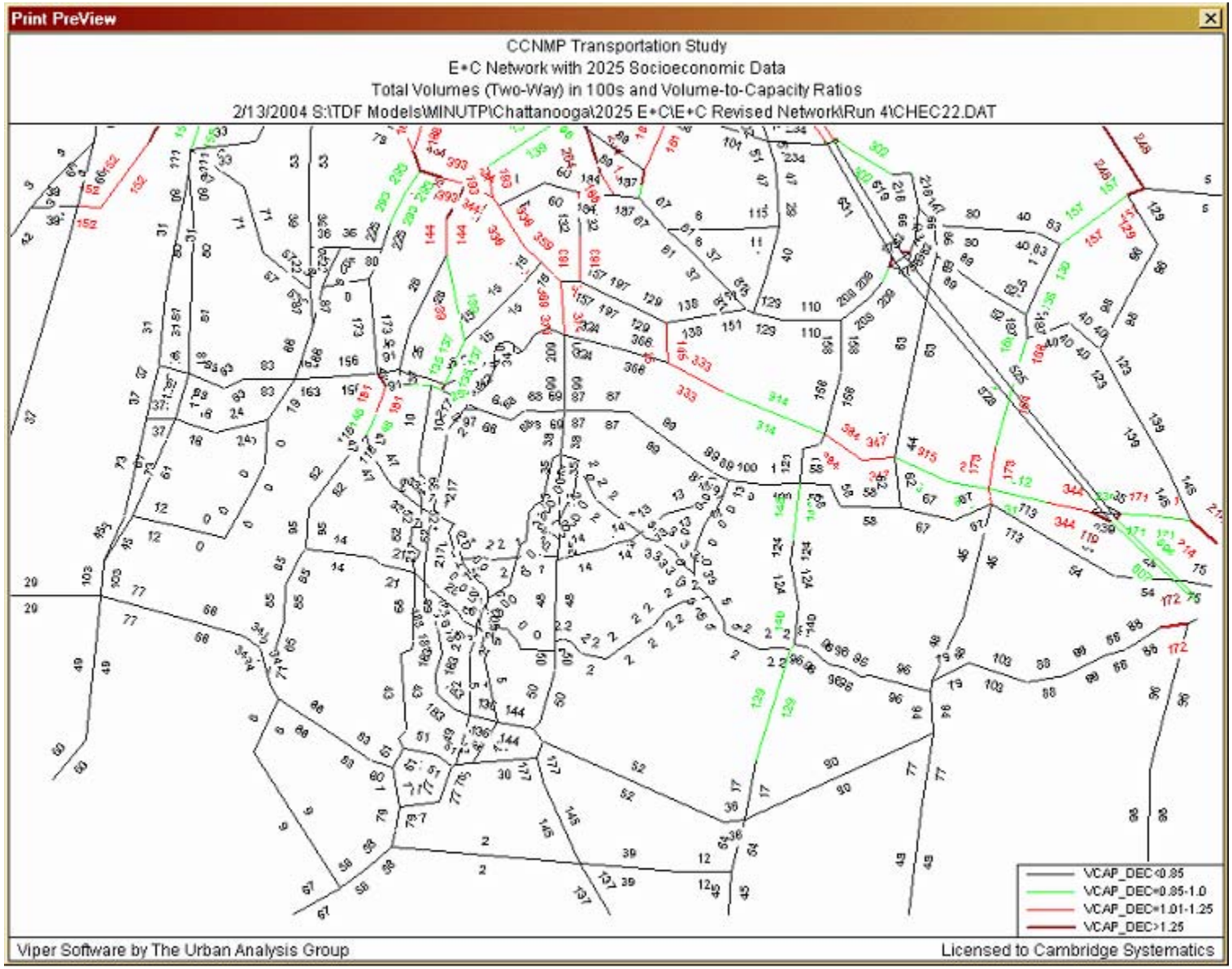
The Existing + Committed (E+C) network provided by the Chattanooga MPO includes projects in the Chattanooga Transportation Improvement Program (TIP) that are expected to be completed by the year 2005, as the E+C network was created in 2000 when the model was last validated. The possibility of including additional projects in the TIP through 2008 in the refined E+C network may be discussed, as E+C networks are usually five years out from the base year model. The E+C network is typically modeled with future horizon year socioeconomic data which was the year 2025 for this study. Running the E+C network with 2025 socioeconomic data helps identify transportation deficiencies that would occur in the year 2025 if no transportation improvements were funded other than what is funded through the year 2005. To maintain consistency among model years and to improve the accuracy of the model within the study area, the validated 2003 base year network was updated to include the projects included in the E+C network provided by the MPO. The overall volume-to-count ratio for the 2025 E+C network model is approximately 1.42, indicating that volumes are approximately 42 percent more than the 2003 counts. This is reasonable given that the E+C volumes are generated using 2025 socioeconomic data.

As illustrated in Figure 9, approximately 6,900 vehicles per day (vpd) and 10,000 vpd (two-way volumes) are projected in 2025 using the E+C network for McFarland Gap Road west of LaFayette Road and Reed's Bridge Road east of the Park, respectively. Counts collected in 2003 demonstrate approximately 3,400 vpd and 4,100 vpd at these same locations, respectively. Approximately 9,900 vpd are projected along LaFayette Road north of the McFarland Gap Road/Reed's Bridge Road intersection in 2025, compared to approximately 7,600 vpd counted in 2003. Approximately 4,400 vpd are projected south of the Park boundary on LaFayette Road in 2025, compared to approximately 5,000 vpd in 2003. In addition, approximately 21,600 vpd are projected to use the US 27 Relocation south of McFarland Gap Road compared to approximately 17,500 vpd in 2003. Approximately 18,900 vpd are projected to use the relocation south of Long Hollow Road.

2025 Socioeconomic Data with 2025 Long Range Transportation Plan (LRTP) Network

The 2025 Long Range Transportation Plan (LRTP) network was also provided by the Chattanooga MPO. This network includes all transportation improvements included in the fiscally constrained LRTP for the Chattanooga urban area. To maintain consistency among model years, the refined E+C network was used to code in the projects included in the 2025 LRTP. The overall volume-to-count ratio for the 2025 LRTP network is approximately 1.40, indicating volumes are approximately 40 percent more than the 2003 counts. Again, this is reasonable given that the volumes are based on 2025 socioeconomic data. The ratio is slightly less than the E+C network, as the 2025 LRTP network includes additional roads that redirect some of the traffic volumes to these new roadways that do not include 2003 counts. As a result, these redirected volumes are not included in the volume-to-count ratio.

Figure 9: E+C Network Two-Way Daily Traffic Volumes with 2025 Socioeconomic Data



Future year volume-to-capacity ratios are discussed in the next section.

As illustrated in Figure 10, approximately 7,300 vehicles per day (vpd) and 10,500 vpd (two-way volumes) are projected using the 2025 LRTP network for McFarland Gap Road west of LaFayette Road and Reed's Bridge Road east of the Park, respectively. Approximately 9,600 vpd are projected along LaFayette Road north of the McFarland Gap Road/Reed's Bridge Road intersection and approximately 4,400 vpd are projected south of the Park boundary on LaFayette Road. In addition, approximately 22,500 vpd are projected to use the US 27 Relocation south of McFarland Gap Road and approximately 19,300 vpd are projected to use the relocation south of Long Hollow Road. A review of these forecasts indicates that some vehicles are redirected from LaFayette Road through the Park to the US 27 Relocation utilizing the 2025 LRTP network.

Travel Demand Deficiencies

Future (2025)

Volume-to-capacity ratios from the refined 2025 LRTP model were evaluated to identify future deficiencies in the study area. During the 2003 base year model validation, a sixth area type designation was added to the model to represent roadways within the Park boundary. As a result, roadways within the Park could be assigned a lower capacity. Capacities used within the Park were based on the rural area type capacities with a ten percent reduction to represent roadway curvature, posted speed, and design standards. This resulted in a capacity of 630 vehicles per hour per lane for Park collectors and 720 vehicles per hour per lane for Park minor arterials. These values can be translated to approximately 12,600 and 14,400 vehicles per day on two-lane roadways for Park collectors and minor arterials, respectively. The only minor arterial roadway within the Park is LaFayette Road. The remaining roadways within the Park are collectors. To be consistent with the validated 2003 base year model, the refined 2025 LRTP model capacities are the same for all three models (2003, E+C, and 2025 LRTP) by area type, facility type, and number of lanes. The possibility of reducing capacities further within the Park as part of alternative model testing may be considered.

Based on future volume-to-capacity ratios within the refined 2025 LRTP model, the following roadways demonstrate a potential need for transportation improvements or alternatives disaggregated by roadways inside the Park boundaries (Park subarea) and roadways outside the Park boundaries (traffic impact study area).

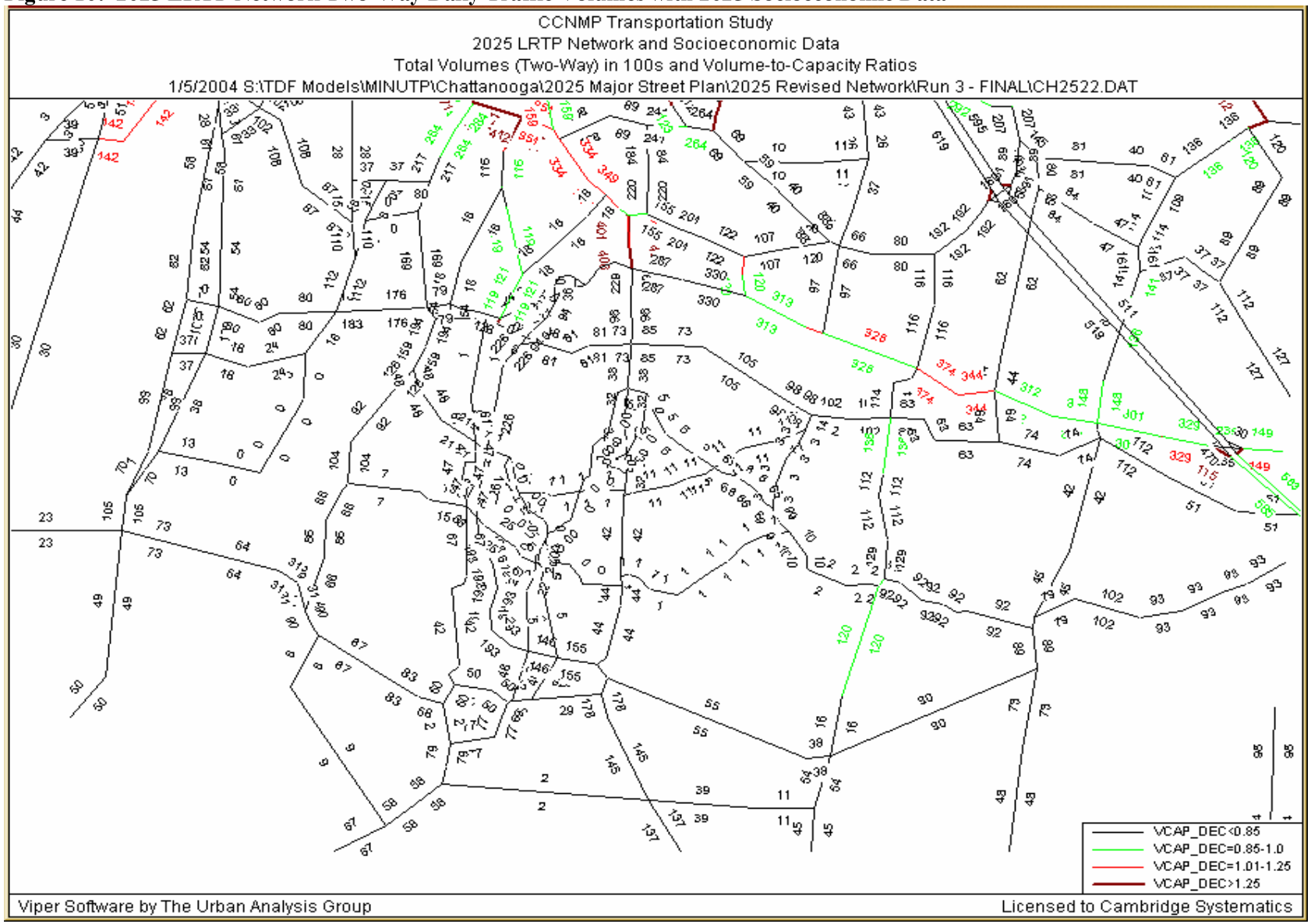
Park Subarea:

- No excessive volume-to-capacity ratios are found on roadways within the Park

Traffic Impact Study Area:

- LaFayette Road from Battlefield Parkway north to 37th Avenue (changes name to Chickamauga Avenue and then Rossville Boulevard north of McFarland Gap Road) - Roadway is coded as four lanes (two lanes in each direction) in both models.

Figure 10: 2025 LRTP Network Two-Way Daily Traffic Volumes with 2025 Socioeconomic Data



Battlefield Parkway from Cedar Lane Drive to east of I-75 – Roadway is coded as four lanes (two lanes in each direction) in both models.

- Schmidt Road/Dewberry Road/Hogan Road from McFarland Gap Road to Chickamauga Avenue – Roadway is coded as two lanes (one lane in each direction) in both models.

- Fant Drive from Battlefield Parkway to Cloud Springs Road – Roadway is coded as two lanes (one lane in each direction) in both models.

- Three Notch Road from Battlefield Parkway to US 41 – Roadway is coded as two lanes (one lane in each direction) in both models.

- McBrien Road from Lakeview Road to US 41 in Tennessee – Roadway is coded as two lanes (one lane in each direction) in both models.

Once the desired speeds and capacities within the Park are established for the future preferred alternative, additional areas of potential congestion within the Park may be identified. A roadway inside the Park that has higher volumes than desired but may not potentially reach traditional capacity is LaFayette Road. Transportation improvements that redirect traffic from LaFayette Road and other roadways inside the Park may be considered during alternatives testing and evaluation.

Next Steps

As demonstrated in the model documentation technical report included in the appendix of this document, the refined MinUTP travel demand model is simulating travel conditions appropriately and will be utilized to test future transportation alternatives for the purposes of this study. Potential types of alternatives to test in the model include, but may not be limited to, the following:

- One-way streets inside the Park boundaries.

- Widening parallel roadways outside the Park boundaries.

- Constructing new roadways outside the Park to redirect through traffic outside the Park.

- Potential Park entrance changes.

- Reduction of speeds and capacities on Park roadways to determine impact on roadway system.

Potential specific projects to test in the model may include:

- Extension of US 27 Relocation north of Battlefield Parkway to intersect with SR 146/Cloud Springs Road (Although this project is included in the LRTP, it was not included in the 2025 LRTP network provided by the MPO).

- Widening of Battlefield Parkway from four to six lanes.

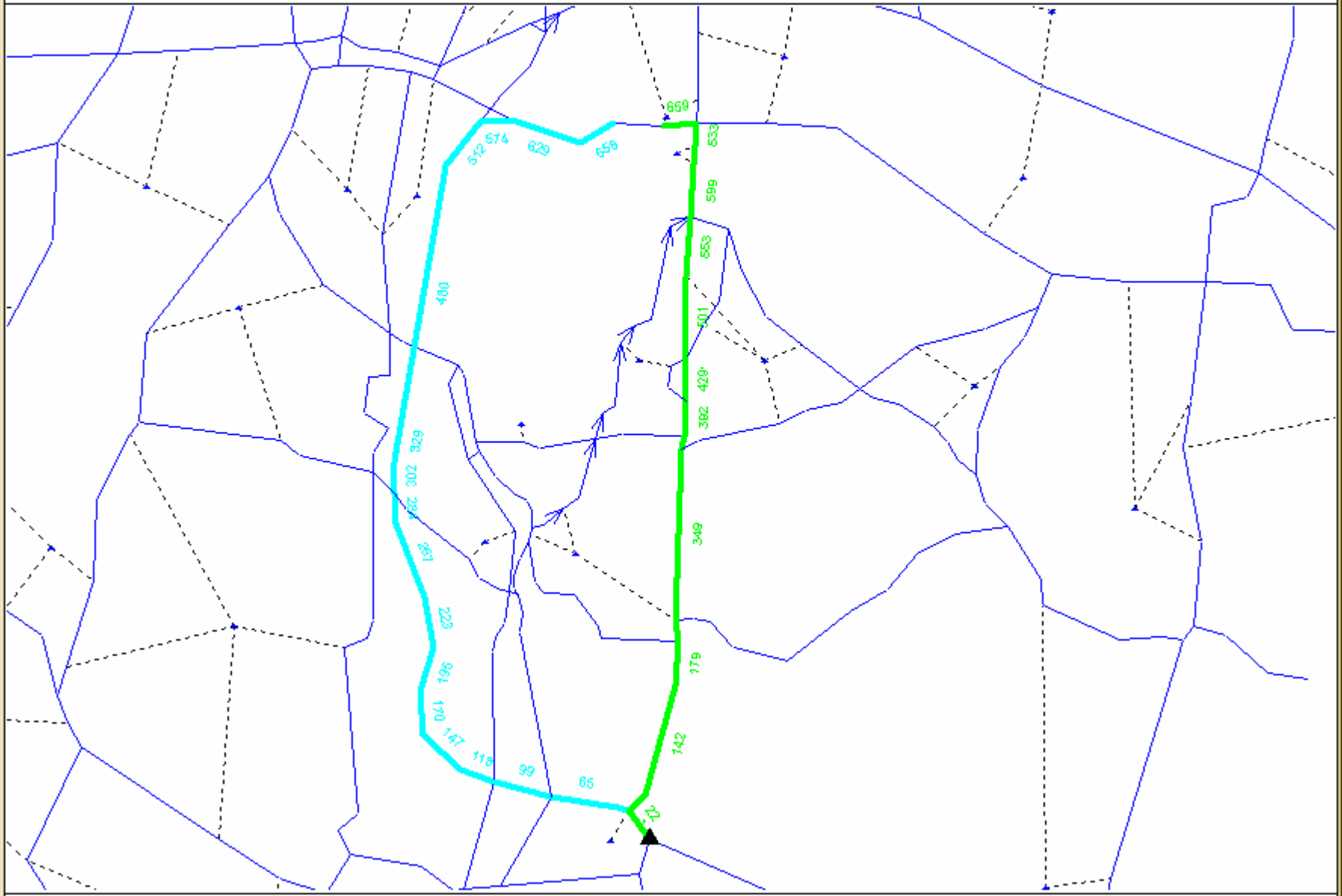
- Widening of Burning Bush Road from two to four lanes.

Traffic calming techniques and/or context sensitive design options may be evaluated off-model.

Appendix C
Model Congested Travel Time Output

Print PreView

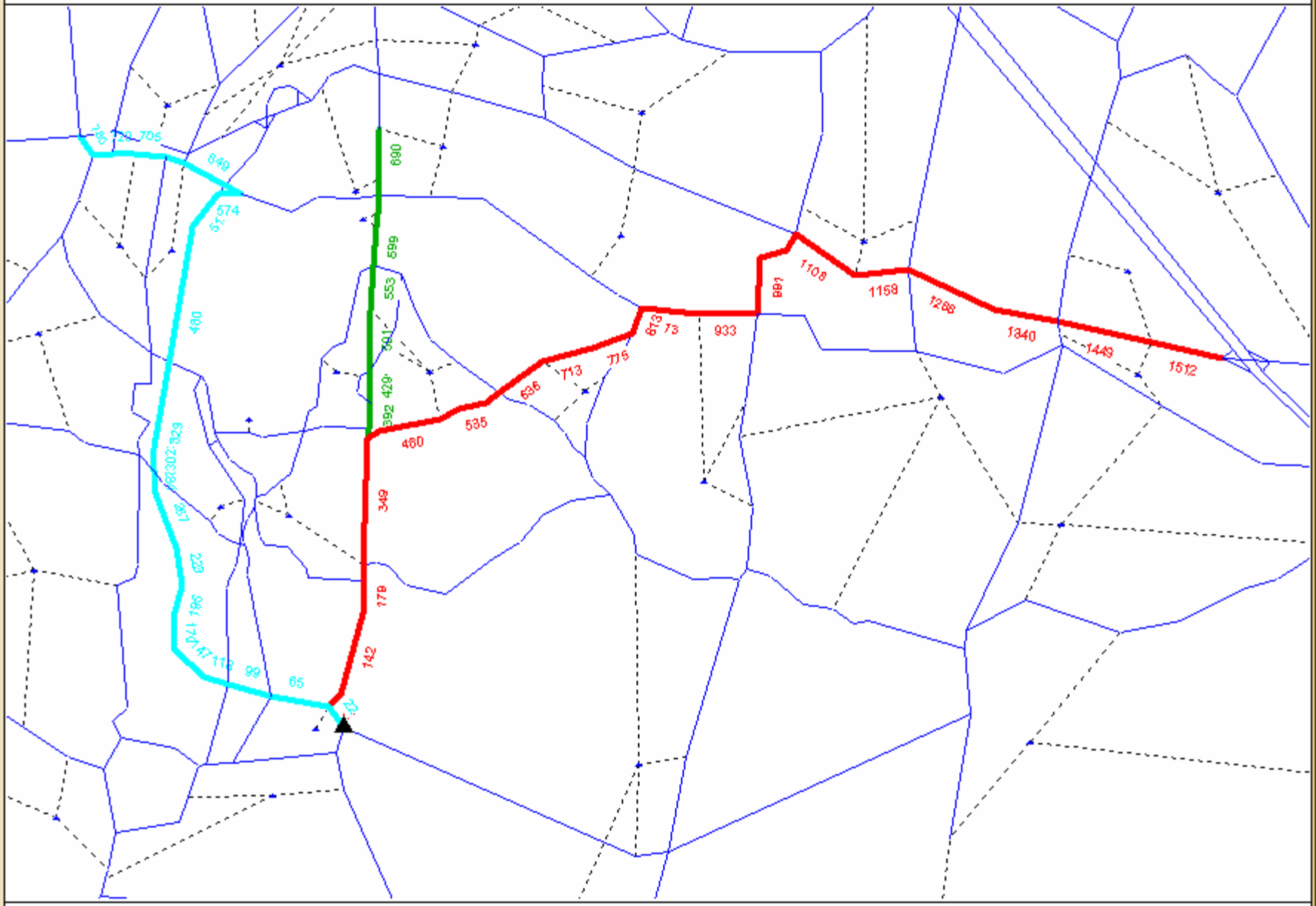
CCNMP Transportation Study
2003 Validated Base Year Model (Run 42)
Congested Travel Time (Implied Decimal Two Spaces From Right)
11/20/2003 S:\TDF Models\MINUTP\Chattanooga\2003\Run 42_VALIDATED\CH0322.DAT



Viper Software by The Urban Analysis Group
Licensed to Cambridge Systematics

Print PreView

Chickamauga and Chattanooga National Military Park Transportation Study
2003 Congested Travel Times (Implied Decimal Two Spaces from the Right)
11/20/2003 S:\TDF Models\MINUTP\Chattanooga\2003\Run 42_VALIDATED\CH0322.DAT



Viper Software by The Urban Analysis Group

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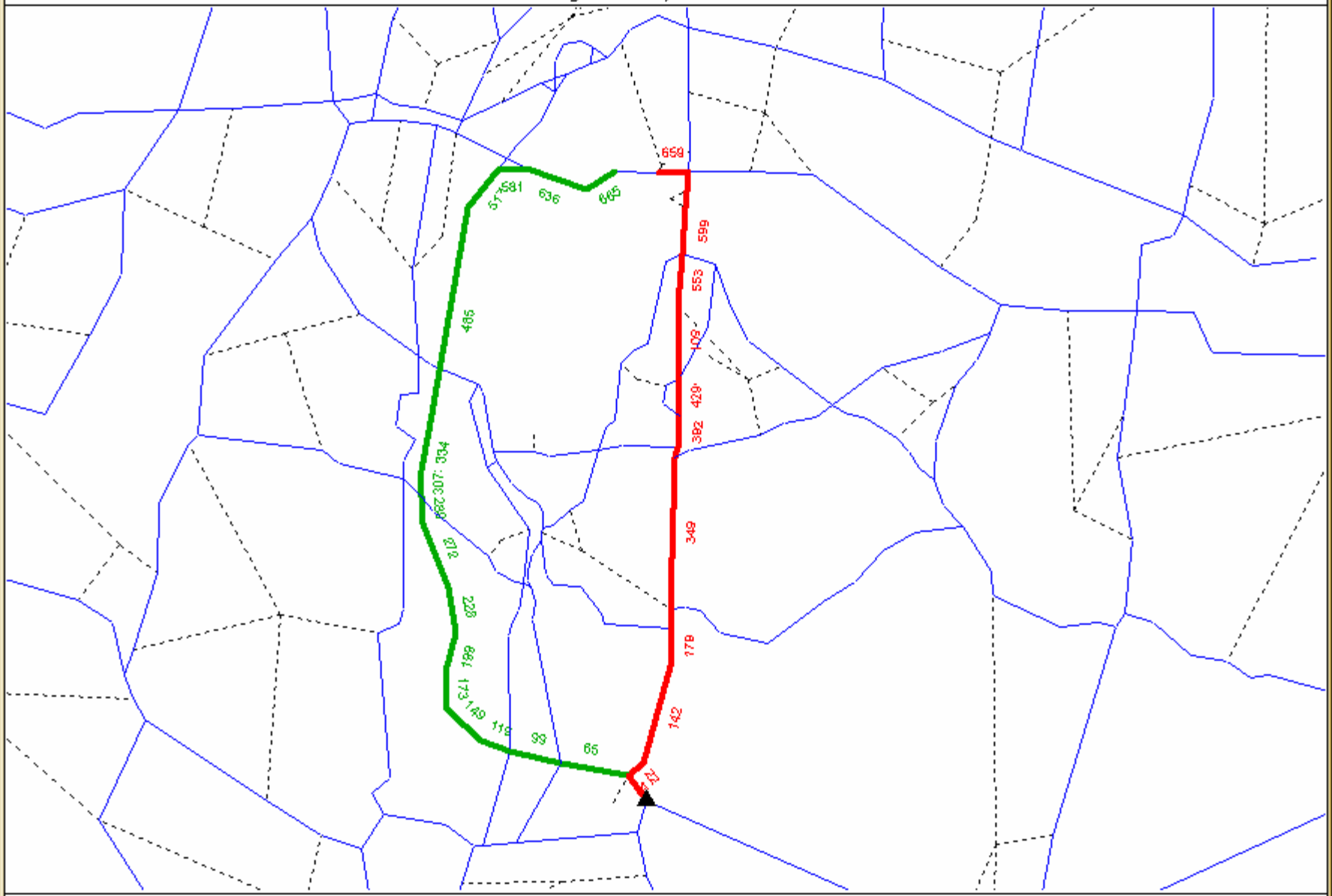
Print PreView

CCNMP Transportation Study
2025 LRTP Network and Socioeconomic Data
Congested Travel Time (Implied Decimal Two Spaces from Right)
11/20/2003 S:\TDF Models\MINUTP\Chattanooga\2025 Major Street Plan\2025 Revised Network\Run 2\CH2522.DAT



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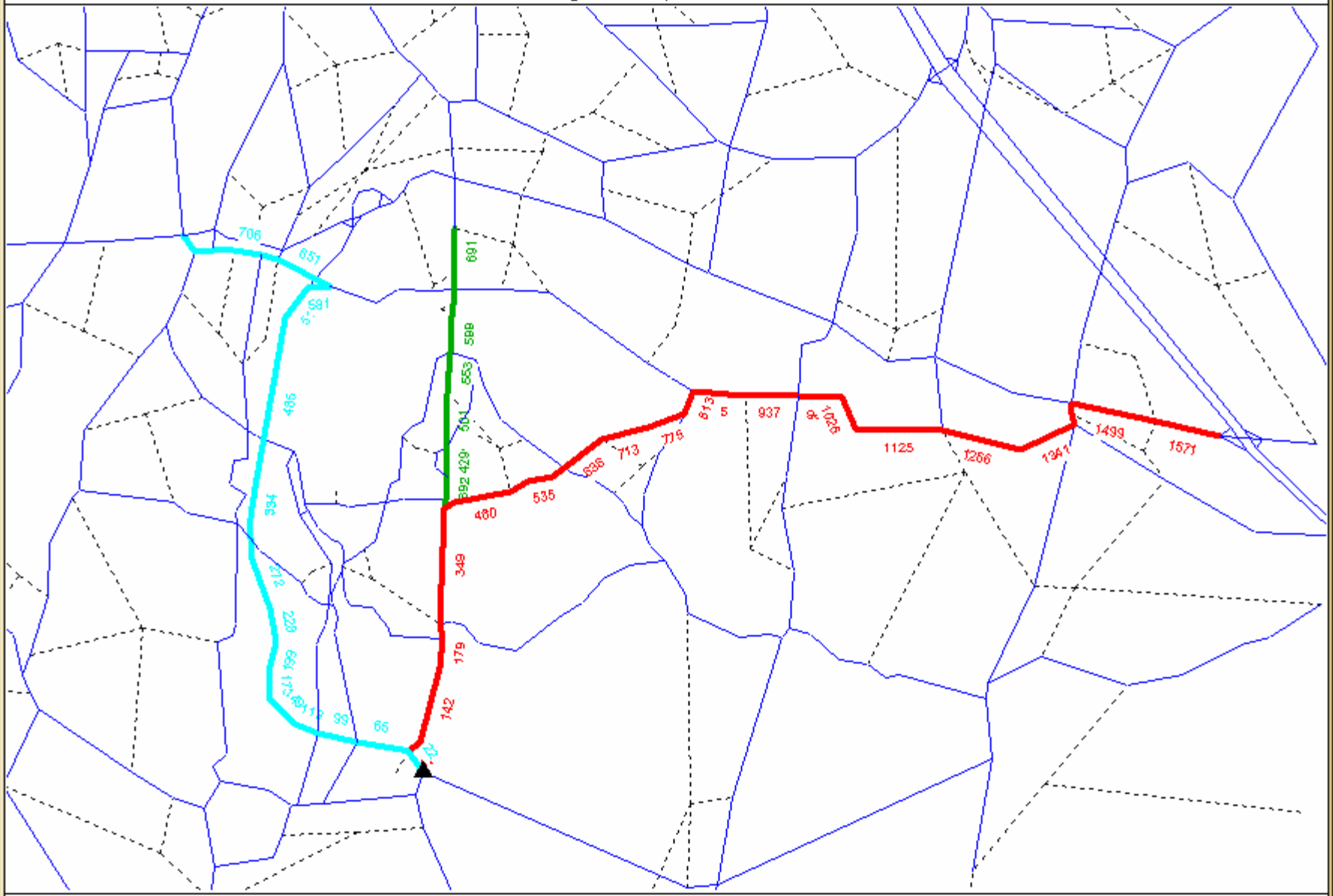
Print PreView

CCNMP Transportation Study
2025 (LRTP Network and Socioeconomic Data) Congested Travel Times
(Implied Decimal Two Spaces from the Right)
11/20/2003 S:\TDF Models\MINUTP\Chattanooga\2025 Major Street Plan\2025 Revised Network\Run 2\CH2522.DAT



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Appendix D
Major Park Roads - Cultural Landscape

Major Park Roads

LaFayette Road

LaFayette Road is a battle-era road that spans the Park from the northern to the southern boundary. This road corridor is considered the most significant corridor in the Park as it is generally recognized as the important north-south supply route during the Civil War, and the line along which Confederate forces engaged Union troops during the September 1863 battle. This road also passes along several historic fields and structures (such as the Kelly and Brotherton Cabins) and provides views and visitor access to hundreds of commemorative monuments, markers, cannons, and tablets. It also provides access to Visitor Center and affords a diversity of views and visitor experiences along its length. Two large limestone bridges and a number of culverts constructed during the Commemorative Period allow the road to span streams inside the park boundary. This road is part of the visitor tour route.

Over time, this two-lane asphalt road has been improved to meet state requirements with twelve foot lanes, a raised road surface along many sections, and a wide shoulder. Until 2000, LaFayette Road continued to be a major north-south route in the area serving as U.S. Highway 27. Although the road follows its historic alignment (with some minor exceptions near Brock Field), improvements associated with use resulted in the surface of the road being raised several feet above its historic elevation.

The Chattanooga Urban Area Bicycle Facilities Master Plan indicates that LaFayette Road (inside the park boundary) has been designated as a recommended bike route and recommends a bike lane outside of the Park. This bicycle transportation facility recommendation provides opportunities for increased recreation and tourism within the larger region.

McFarland Gap Road

McFarland Gap Road is a battle-era road. It is one mile long within the park boundary. Like Alexander Bridge Road, it is a two-lane, painted line, asphalt paved road with wide mown turf edges. It traverses the Park's northern edge west of LaFayette Road and intersects with US 27 just outside the Park's northwestern boundary. This road passes over hilly terrain and intersects with McDonald Field at its intersection with LaFayette Road. A significant stone double box culvert dating to the Commemorative Period is found along this road just inside the northwest boundary of the park.

Reed's Bridge Road

Reeds Bridge Road is a two-mile long, two-lane, painted line, asphalt paved road with wide mown turf edges and traverses the northeast comer of the Chickamauga park unit, running between LaFayette Road and the park's eastern boundary. A Commemorative Period stone bridge is found along this road just to the north of the Superintendent's residence.

Alexander Bridge Road

Alexander Bridge Road is a battle-era road. It is a 2.9 mile long, two-lane, painted line, asphalt paved road with wide mown turf edges. It runs northwest to southeast from LaFayette Road to Chickamauga park unit boundary at West Chickamauga Creek. A number of paved pull-offs are located along this road, and its northern portion (between LaFayette and Battleline Roads) is part of the visitor tour route. A Commemorative Period stone bridge is found along this road just to the south of its intersection with Jay's Mill Road.

Although this corridor contains less commemorative features than others in the Park, it is the only major road to provide access to the West Chickamauga Creek (within the Park boundary), and the ca. 1907 Alexander's Bridge. The wartime wooden bridge, while no longer extant, figured significantly in the battle. The area around the bridge also served as a park for Confederate ordnance wagons and as a field hospital.

The diversity of visitor experience is lower along this road as it does not pass along any fields and contains predominately enclosed views contained by forest. Historic photos dating to the Commemorative Period indicate that this road corridor was much more open, with screened views to nearby fields. During the battle, three fields lined the edges of the southern section of this road corridor. The NPS has expressed interest in restoring these historic fields to open critical viewsheds. This action would expand the interpretive potential of this road corridor and enhance the visitor experience. This site is also proposed to be included within the greenway corridor along West Chickamauga Creek, which would expand its interpretive opportunities.

US 27

While most of the new U.S. 27 route is outside of the Park, a portion of the highway passes through the northeastern corner of the Battlefield. The large, divided, four-lane highway was opened to the public in 2001 and has a great deal of traffic moving at a high rate of speed. The area of the Park within which this highway passes had no trails, roads, or monuments; however, a wide band of forest was cleared to relocate the corridor. A picnic area accessed by the highway was added in the northeastern-most corner of the Park with the completion of the highway.

Secondary Park Roads

Glenn-Kelly

Glenn-Kelly Road is a 2.1 mile long, asphalt paved road with narrow mown turf edges. Running north to south between LaFayetteRoad and the west boundary of the Park, the one-way road currently has a single painted line indicating a dedicated bike lane. Originally this smaller lane was painted to indicate there was only one driving lane, and over time, the small lane grew into a bike lane. This road is part of the auto tour route and passes along both the northern and southern sections of Dyer Field. It also contains several monuments, markers, and tablets as well

as a few paved pull-offs and parking areas. This road is generally characterized by enclosed views surrounded by dense forest, although a few open views are afforded along the edges of Dyer Field.

Dyer Road

Dyer Road is a .8 mile long battle-era road running east to west between Wilder Road and LaFayette Road; the eastern portion of the road between Glenn-Kelly Road and LaFayette Road was realigned by Park Commission c. 1900. This road is also paved with asphalt and contains narrow mown turf edges. The ca. 1875 Dyer House (Ranger's Quarters) and fields are located along this road, which is characterized by expansive views of the landscape. The large cedar trees providing some screened views along portions of the road edge closely reflect those typically found during the Commemorative Period.

Glenn-Viniard Road

Glenn-Viniard Road is a 1.1 mile long battle-era road running between LaFayette Road and the junction of Wilder and Glenn-Kelly Roads. This road has an asphalt paved surface with narrow mown turf edges. Originally this road wrapped around the western side of the Wilder Brigade Monument. During the 1960s, this road was realigned to pass on the east side of the Monument in anticipation of a US 27 realignment proposal that was never implemented.

While the character of this roadway is dominated by enclosed forest on either side, it opens up to expansive views of the Wilder Monument and Field. It too is part of the auto tour route. A Commemorative Period stone bridge is found along this road just to west of its intersection with LaFayette Road.

Brotherton Road

Brotherton Road is a two-mile long battle-era road running east-west between LaFayette Road and Alexander Bridge Road. It has a narrow asphalt paved surfaces with narrowly maintained edges. Although forested along most of its length and characterized by its enclosed "tunnel-like" views, the road passes along both Brock and Winfrey Fields. Many monuments, markers and tablets are located along this corridor, as are a few pull-off areas. This road also passes though a limestone glade that was once part of the larger Brock Field.

Snodgrass Road

Snodgrass Road is a .25 mile road linking Glenn-Kelly Road with the Snodgrass Cabin. It has an asphalt paved surface with narrow mown turf shoulders. Historically Snodgrass Road continued west past the cabin along the side of Snodgrass hill. Although this road trace remains, it is neither paved nor open to the public. The paved segment provides filtered views of the open woodland along its edge as it ascends up the hill. Near the Snodgrass Cabin, several monuments, markers, and cannons mark one of the most significant sites of the battle. Here the views of

Snodgrass Field are open and expansive, and several parking spaces are provided for visitor use. This road is part of the auto tour route.

Snodgrass Hill Drive

Snodgrass Hill Drive is a .25 mile road linking the battle-era Snodgrass Road with the top of Snodgrass Hill. This road extension, added during the Commemorative Period, turns south at the Snodgrass house before terminating at the top of the hill where many monuments, markers, and cannons have been erected. An observation tower once stood at the top of the hill, but was removed in 1947 due to its poor condition. This road is also part of the auto tour route.

Battleline Road

Battleline Road is a one-way, single lane asphalt road with a wide mown turf corridor. Like Poe Road, this road was built during the Commemorative Period to access important areas of the battlefield. Its corridor has a unique character which influences spatial organization. A large number of monuments are situated along the roads denoting a significant line of battle, hence the name. The result is much wider mowed turf one either side, within which the monuments are placed. While this widens the corridor, the monuments form a loose wall to form a more complex spatial experience. The open woodland along this road allows views into the LaFayette Road corridor and adjacent fields. This road is part of the auto tour route and significantly contributes to the visitor experience.

Poe Road

Like Battleline Road, Poe Road is a one-way, single lane asphalt road with a wide mown turf corridor. It too was built during the Commemorative Period to access important areas of the battlefield. A secondary battle-era road that accessed the Poe farmstead was obliterated after the Civil War--the new Poe Road does not follow this historic alignment. Like Battleline Road, the Poe Road corridor also contains a large number of monuments, markers, cannons, and tablets. The open woodland along this road allows views into the LaFayette Road corridor and adjacent fields. This road is part of the auto tour route and significantly contributes to the visitor experience.

Jays Mill Road

Jays Mill Road is a 1.1 mile long battle-era road running north to south between Reed's Bridge Road and Alexander Bridge Road. It is a narrow two-lane, unpainted, tar and chip road with narrow mown turf edges. Fewer monuments and pull-offs are found along this roads as compared to those in the found along the auto tour route. The corridor is densely vegetated and has little diversity of visitor experience. Although this road accesses the wartime site of Jay's Mill, this feature is not heavily interpreted. The northern .2 mile segment of the road was resurfaced with asphalt in 1996 while the rest of the road is in poor condition.

Viniard-Alexander Road

Viniard-Alexander Road is a 2.1 mile long battle-era road in the southeast corner of the Park. The road runs between LaFayette Road and Alexander Bridge Road and continues as a trail from Alexander Bridge Road to the Park's east boundary. Like Jay's Mill Road, it is a narrow two-lane, unpainted, tar and chip road with narrow mown turf edges. It too is densely vegetated and has an enclosed "tunnel-like" feel. This road has not been resurfaced for several years and is in poor condition. Tablets make up the majority of commemorative features along this corridor.

Wilder Road

Wilder Road is a .45-mile battle-era road segment that was originally part of the Glenn-Viniard Road. During the 1960s, a new segment of Glenn-Viniard Road was added to the east side of the Wilder Brigade Monument and its connection to its historic western alignment was severed. This historic road segment (now referred to as Wilder Road) connects the Chickamauga-Vittetoe Road to the north and the Vittetoe-Chickamauga Road to the south, both of which were added during the Commemorative Period. It also provides access to the Wilder Brigade Monument, its associated visitor parking, and trail access to Bloody Pond. Several monuments, markers, cannons, and tablets are clustered along this western side of the road.

Vittetoe-Chickamauga Road

Vittetoe-Chickamauga Road is a .7 mile long road located on the western side of the Park, south of the Wilder Brigade Monument. It is a narrow two-lane, unpainted, tar and chip road with narrow mown turf edges. This road was constructed during the Commemorative Period.
This road currently connects to the battle-era Wilder Road and provides access to the Wilder Brigade Monument, as well as a few other monuments located along the Park's southwestern boundary.

Chickamauga-Vittetoe Road

Chickamauga-Vittetoe Road is a 1.1 mile long, narrow two-lane, unpainted, tar and chip road with narrow mown turf edges. Located on the west side of the park, it extends Wilder Road further north. Constructed during the Commemorative Period, the road intersects with Mullis-Vittetoe and Vittetoe Roads near Lytle Gap, and follows the railroad corridor along its northern segment. A few tablets comprise the only commemorative features found along this road. The NPS has plans to resurface this road as it is in poor condition.

Vittetoe Road and Mullis-Vittetoe Road

As Vittetoe Road (.6 miles) and Mullis-Vittetoe Road (1.3 miles) share similar characteristics, they are described here under one heading. Built during the Commemorative Period, both these roads are located in the northwest quadrant of the park. Each has a narrow gravel surface and relatively no maintained edges. Neither is currently open to the public.

Tree canopy covers these road corridors, giving them an enclosed "tunnel-like" feel. One exception to this is a small clearing located along Mullis-Vittetoe Road where several monuments and markers are clustered near the trail leading to Snodgrass Hill. Several tablets are also located along Vittetoe Road, although this corridor is completely contained by forest. As these roads remain unpaved, they most closely reflect the historic character of the early Commemorative Period. Both of these roads have been improved with culverts and headwalls of concrete or stone.

Mullis Road

Mullis Road connects LaFayette Road just south of the Park Headquarters to McFarland Gap Road, making a ninety degree turn at Mullis Spring. This spring dates to the time of the battle. The eastern portion of this road follows the historic alignment, whereas the western portion was moved further east after the battle. Although not open to public automobile use, this road is surfaced with tar and chip, except for a small segment that lies in McDonald Field which has replaced by a single-lane gravel surface. A small paved apron remains at LaFayette Road and a paved turnaround has been added just off the road. At the forest/field edge stands a gate and beyond this the two-lane tar and chip surface remains. This road has been improved with culverts and headwalls of concrete or stone.

The battle-era Mullis Field located to the west of this road has not been restored. This area has been heavily impacted by the Women's Army Auxiliary Corps (WAAC) development, also referred to as the South Post area, which was constructed during World War II. The interpretive value of this road is associated with both the historic periods, as well as the archeological features of the historic WAAC site.

Snodgrass-Savannah Road

Snodgrass-Savannah Road (.6 miles) runs north-south and links the east-west leg of Mullis Spring Road to Glenn-Kelly Road. Formerly named the North Fork of the Glenn-Kelly Road, this narrow two-lane road generally follows its battle-era alignment. It is unlined and surfaced with tar and chip. A closed gate restricts vehicular access to and from Glenn-Kelly Road. This road has no a maintained edge. Its character has been heavily impacted by the campground facilities located along and adjacent to its corridor. Like Mullis Spring Road, this corridor has also been heavily impacted by former WAAC development. Although it is a battle-era road, it does not contain any commemorative or interpretive features.

Thedford Ford Road and Dalton Ford Road

Both Thedford Ford Road and Dalton Ford Road also share similar characteristics. Thedford Ford Road (1 mile) begins at Viniard-Alexander Road and continues south to West Chickamauga Creek. Dalton Ford Road (.4 miles) connects Thedford Ford Road and traverses south to West Chickamauga Creek. Both of these roads are located in the southeast quadrant of the park and

terminate in agricultural fields before reaching the creek. Evidence of road traces remain along the creek edge. Both of these battle-era roads were used to ford soldiers across the creek in 1863. As these roads remain unpaved and traverse along and though large agricultural fields, the character of these roads is likely close to that which would have been present during that time period. Neither of these roads are open to public automobile use.

Historic Structures associated with the Circulation System

More than 100 culverts constructed of stone or concrete with associated stone or concrete headwalls are located throughout the Park. Construction of these features occurred during the Commemorative Period (1890-1942) as the roads were improved. There are a variety of types and styles of culverts with pipe, box, double box, triple box, and arched opening. Culverts allow small streams and run-off to pass under roadways, and are distinguished from bridges by a stone lining of the stream.

During the same time period, several miles of stone-lined drainage ditches were also being constructed along roads. Only remnants of these remain today, as most were removed during the 1980s. Those that remain have become covered with earth and debris during road work.
There are five historic stone bridges within the park, each constructed c. 1935.[1] LaFayette Road North Bridge is 66-foot long and is constructed of cut limestone laid in random courses with an elliptical arch opening. The bridge is located .2 miles from the north boundary of the Park along LaFayette Road.

LaFayette Road South Bridge is 88-foot long bridge constructed of cut limestone laid in random courses with elliptical arch opening with arch ring and keystone. The bridge is located on LaFayette Road, 2.9 miles south of the Park boundary.

Glenn-Viniard Road Bridge is located approximately 200 feet west of LaFayette Road. It is a 55’ long bridge, also constructed of cut limestone laid in stacked courses with elliptical arch opening with arch ring and keystone.

Reed’s Bridge Road Bridge is a 66' long by 10-12' high bridge with walls approximately 2' above grade. It is located on Reed's Bridge Road, approximately .2 miles from LaFayette Road and constructed of cut limestone laid in random courses with elliptical arch opening.

Alexander Bridge Road Bridge is located at the intersection of Jay’s Mill Road. Like the LaFayette Road Bridge North, it is constructed of cut limestone laid in random courses with an elliptical arch opening.

Alexander Bridge is located along Alexander Bridge Road and spans West Chickamauga Creek. Built in 1907, it is a pre-fabricated 75-foot pony truss bridge. Stacked limestone retaining walls

[1] US Department of the Interior, National Park Service. “Historic American Engineering Record: Chickamauga and Chattanooga National Military Parks Tour Roads.” (National Park Service, 1998).

support the roadbed on the north and south sides. In the 1970s the deck and cross beams were replaced to give the structure added strength. The Gordon Slough Bridge, a 16-foot girder span with a reinforced concrete deck, is located 100 feet south of this bridge outside of the Park boundary.

The new US 27 overpass bridge is a contemporary reinforced concrete structure spanning Lytle Road and the railroad corridor below.

Several tree wells are located along LaFayette Road. These features are constructed of cut limestone stacked in courses. These tree wells were built to retain soil around the trees that was added when the road bed was regraded. Their date of origin is currently unknown.

Appendix E
Park Roads Sensitivity Rating Criteria

Park Roads Sensitivity Rating Criteria

The Park Road Sensitivity Evaluation Criteria

The following describes the criteria used for the Chickamauga Battlefield Park road's sensitivity evaluation.

Association with Historic Period

There are two historic periods from which Chickamauga Battlefield derives its national significance. The first is the Battle of Chickamauga, which took place in 1863. The second is Commemorative Period, which dates from 1890-1942. Established in 1890, Chickamauga-Chattanooga was the nation's first National Military Park. This Park not only helped commemorate the battle and the soldiers who fought there, but also served as a place of Union and Confederate veteran reconciliation. Roads that represent both the battle and commemorative periods receive the highest ranking. Roads that were not present during the battle, but which were built during the commemorative period receive the second highest ranking. Those that post date the commemorative period receive the lowest ranking.

Rankings
3 Association with both the Battle and Commemorative Periods
2 Association with only the Commemorative Period
1 Association with neither period

Interpretive Value

The interpretive value is based upon the road's role in the battle, as well as the road's use in interpreting the battle. Those roads that had significant troop movement or fighting within its corridor, as well as those that contain high concentrations of interpretive tablets and commemorative features intended to mark troop movements and memorialize soldiers and units that fought in the battle are considered to have high interpretive value. Roads surviving from the battle that did not play a significant role in influencing troop movement or combat, and commemorative period roads which contain lower concentrations of interpretive tablets and commemorative features are considered to have moderate interpretive value. Roads that post-date the battle and have few commemorative features are considered to have low interpretive value.

Rankings
3 High interpretive value
2 Moderate interpretive value
1 Low interpretive value

Historic Integrity

Integrity is the ability of the road to convey its historical importance or significance. For a road to possess integrity it must retain the physical characteristics that gave it its historic identity and

which existed during the historic periods of significance. The periods of significance for the Chickamauga Battlefield include the Battle Period (1863) and the Commemorative Period (1890-1942). For the purposes of this study, road integrity is evaluated in order to determine which roads may be more sensitive to changes resulting from transportation improvements (rather than for determination of eligibility to the National Register of Historic Places). Those roads that retain a high degree of integrity are more sensitive to change than those that do not. In terms of roads, integrity can be manifested in the following seven ways[1]:

- *Location* refers to the actual placement and siting of a road.

- *Design* is the conscious composition of elements (alignment, paving, and, for some roads, views and tree canopy) that comprise the form, plan, space, structure and style of a road. This criteria would apply to new roads that were intentionally designed and built during the Commemorative Period. For less-formally designed roads, such as those dating to the battle, this criteria applies to whether or not the road still exhibits its original response to natural and other features, as it was improved during the Commemorative Period.

- *Setting* is the physical environment through which a road passes. Whereas location refers to the specific area that the road occupies, setting illustrates the character of the place in which the road plays its historic role. This evaluation is based upon mapped conditions of the battle and commemorative periods, as well as historic photos dating to the commemorative period.

- *Materials* are the physical elements used to create a road, including materials used for the subsurface, paving, curbs, culverts, etc. It is rare that a modern road will retain all of the same materials as those used during a road's period of significance. However, the original materials which do remain and replacement materials which are similar in texture, color, and appearance to original materials enhance a road's integrity.

- *Workmanship* is the physical evidence of the craft of a particular individual, culture, or group of people during any given period in history. For example, many of the bridges and culverts along the roads still exhibit the workmanship associated with the CCC during the Commemorative Period. The actual physical condition of the road is not considered here.

- *Feeling* is the quality a road has in evoking the historic or aesthetic sense of the historic period. Although intangible, the feeling of a road depends on the presence of appropriate physical characteristics that convey its historic qualities.

- *Association* is the direct link between a road and the events or persons with which the road is associated.

[1] Land and Community Associates, "How to Identify and Evaluate Historic Roads: Draft Methodology and Application." (Charlottesville: Land and Community Associates, no date). On file at JMA, Inc. library.

Roads that possess most of these aspects are considered to have high historic integrity. Roads that possess some of these aspects are considered to have moderate historic integrity. Roads that possess few of these aspects are considered to low historic integrity.

Rankings
3 High integrity
2 Moderate integrity
1 Low integrity

Auto Tour Route

The automobile tour route within Chickamauga Battlefield has been in place since1957. This route incorporates designated tour stops that identify key points on the battlefield which correspond to numbered descriptions on the official map and guide distributed at the visitor center. It includes LaFayette, a small segment of Alexander Bridge, Battleline, Poe, Glenn-Viniard, Snodgrass, and Glenn-Kelly Roads. An expansion of this tour route has been considered several times over the years (1964, 1977, and 1982). However, these NPS recommendations were never implemented due to safety considerations relating to heavy traffic along LaFayette Road (formerly US 27). A tape/CD tour, which is available for purchase at the visitor center, does follow the battle action for both days. This tape route includes (in addition to the roads mentioned above) Reed's Bridge, Jay's Mill, and Brotherton Roads. The current set of waysides reflects interpretation of this route.

Over the past several years, the park staff has again begun to reconsider official expansion of the tour route in order to better interpret events that took place on the eastern side of the Park, and which correspond to troop movement and contact early in the battle (September 18 and 19, 1863). While alternatives for the expanded tour route are still in draft form and have not yet been adopted by the NPS, they are recognized here as potential tour routes which can play a role in interpreting the history and significance of the battlefield and shaping the visitor experience. This expanded tour route would coincide more closely with the tape/CD tour and include additional stops where the first day of battle occurred. In addition to Reed's Bridge, Jay's Mill, and Brotherton Roads, this expanded tour route would also include Dyer and Wilder Roads (the latter of which is proposed to be reconnected to Glenn-Viniard Road).

Those roads that are incorporated into the existing auto tour (both brochure and tape/CD) are considered the most significant. Roads that are currently being considered as part of the expanded tour route are considered moderately significant. Roads that are not part of either the existing or proposed alternative tour routes are considered to have the lowest significance.

Rankings
3 Roads incorporated into existing tour route
2 Roads being considered for the expanded tour route
1 Roads not incorporated into either the existing or potential tour route

Visitor Experience

While difficult to quantify, visitor experience plays a significant role in establishing a road's sensitivity to future impacts. Visitor experience is shaped by a combination of factors, but particularly by conditions that create a favorable environment for visitors to understand and enjoy the Park's resources. These environmental conditions have an impact on whether or not the visitor feels safe and relaxed while traveling along the park roads, and whether or not the visitor has ample access and opportunity to either physically or visually engage important park resources and interpretive displays to better understand the history and significance of the Battlefield.

Based upon these factors, roads having both of these qualities (ample access to important park resources, and accommodation of safe and leisurely visitor circulation and parking) are considered to greatly contribute to a positive visitor experience. Roads having only one of these qualities are considered to moderately contribute to a positive visitor experience. Roads having neither of these qualities are not considered to contribute to a positive visitor experience. While scenic resources and recreational opportunities also impact visitor experience, these qualities are not considered here because they are not integral to the Park's mission. Current public access limitations are also not considered in the rankings as conditions may be temporary.

Rankings

3 Roads that highly contribute to a positive visitor experience
2 Roads that moderately contribute to a positive visitor experience
1 Roads that do not contribute to a positive visitor experience